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NOVEMBER 1988

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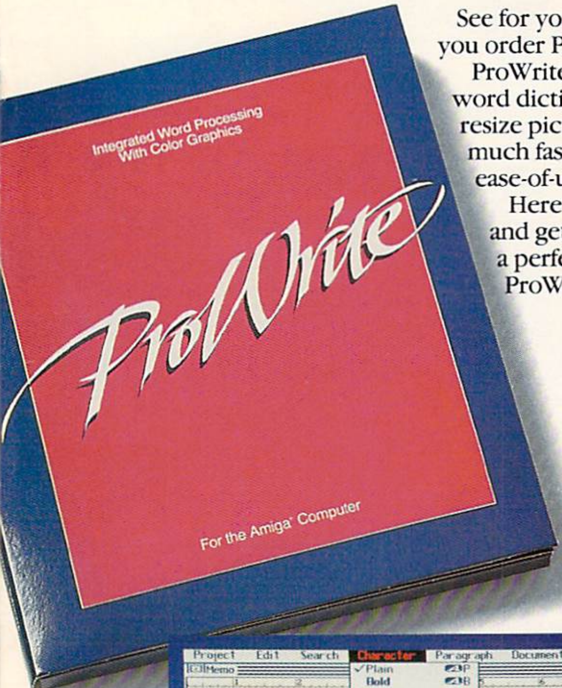


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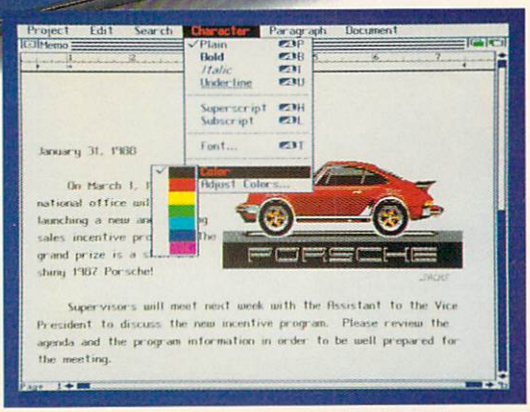
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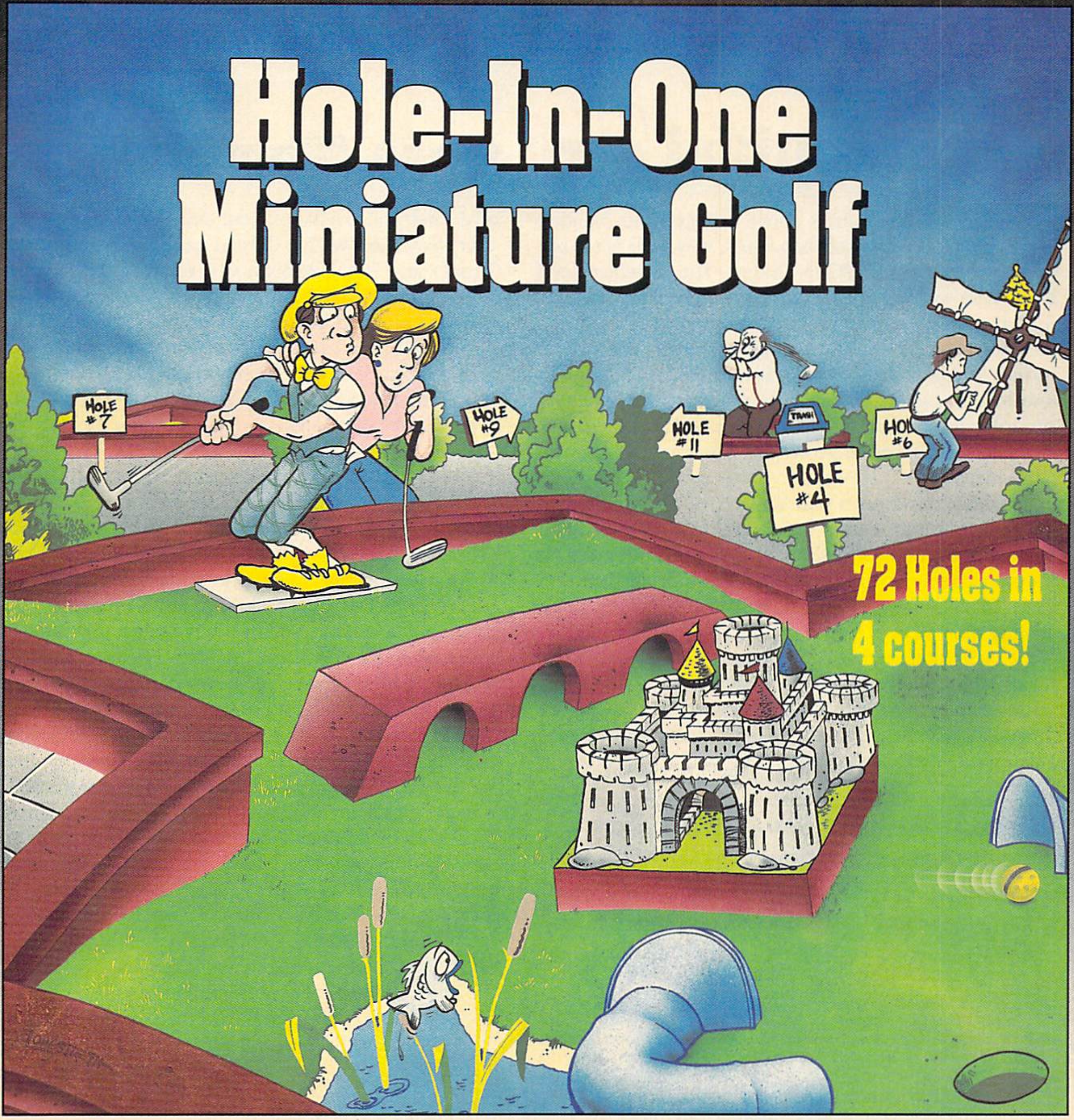
COLUMNS

FEATURES

Cover photography by Dana Dominiak

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Turn to page 79 to find out how you can become a member.

ISSUE NO. 3 NOVEMBER 1988
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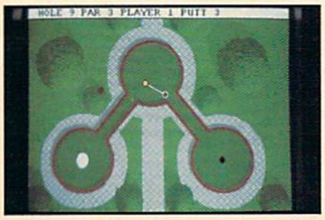
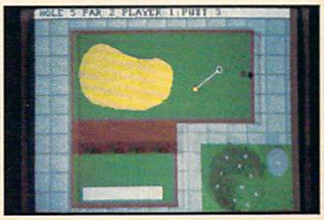


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Hole-In-One Miniature Golf is 72 Holes of pure fun in 4 separate courses that give you classic miniature golf as well as hilarious fantasy holes. The digitized sounds of the crowds, the ball, and special effects all add to the fun and realism.

Another revolutionary game from the company that brought you Vampire's Empire, Amegas, and Hollywood Poker — DigiTek Software!


Amiga versions shown here.

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VIEW FROM THE BRIDGE

Ahoy!'s AmigaUser Goes Monthly!

If we had any doubts about increasing to monthly publication after only two issues, they were put to rest by June's AmiEXPO in Chicago. The excitement level there was like notning we've observed since covering the Commodore 64 at its peak several years ago. Users and manufacturers alike were so gushing in their enthusiasm for the Amiga that we had a hard time navigating the crowded aisles without slipping. Despite our tight schedules —we still publish *Ahoy!* for Commodore 64/128 users as well —we felt that we had to grow with this growing segment of the industry.

Publishing four times a year, and even eight times a year, a great deal of information had to fall between the cracks. Monthly publication will allow us to cover more products in a more timely fashion—and in greater detail than ever before. In addition, we'll keep offering you features that you can find only here.

One such feature is the *Ahoy! Access Club Clipper.* Bound into all subscription copies, this month's *Clipper* offers special discounts on merchandise from Discovery, Creative Computers, Pioneer, and other Amiga vendors advertising in this issue—exclusive deals not offered in their display ads! There's also a list of retail outlets where you can show your *Ahoy!* Access Club Card to receive in-person discounts. Turn to page 79 to find out how to receive a free membership.

Morton Kevelson's obsession with taking things apart, and his ability to translate his findings into useful terms, has earned him a reputation as one of computer journalism's leading hardware dissectionists. In this issue he inspects two new SCSI controllers and some backup software—practically all you need to do some *Hard Driving on Your Amiga.* (Turn to page 40.)

Want to add to your knowledge of Amiga BASIC and your software library at the same time? Type in *ABM*, an action game in the *Missile Command* mode by John Haubrich. (Turn to page 66.)

We had some catching up to do in this month's *Scuttlebutt* section. Though it took 12 pages, we managed to mention every new Amiga-compatible product that came to our attention in the past three months. (Turn to page 9.)

Along with reviewing game software, Entertainment Editor Arnie Katz is able to *preview* it like no one else can. Nearly a decade as the dominant figure in video and computer game coverage gives him the advantage over all other writers in recognizing and analyzing gaming trends. This month he and Joyce Worley discuss the wave of licensed properties that's already begun to wash up on your Amiga screen. Along with Bill Kunkel, they also provide full-length reviews of *Joe Blade, Bard's Tale II, Empire, Defcon 5,* and *Superstar Ice Hockey.* (Turn to page 24.)

This month's *Reviews* section features at the very least one product that's profiled here for the first time anywhere. We know because we tore the BusExpander out of Comp-U-Save's hands almost as soon as the last chip was soldered in. Also included are indepth analyses of *CygnusEd Professional, Zing!Spell,* version 1.3 of *AC/BASIC,* and *Access 64.* (Turn to page 48.)

While Executive Editor Michael R. Davila filled the *Amiga Toolbox* himself this month, submissions from freelance programmers are welcome. Share your programming and hardware knowhow with the Amiga community, develop a sense of kinship with your fellow users, and receive fat checks from us! (Turn to page 77.)

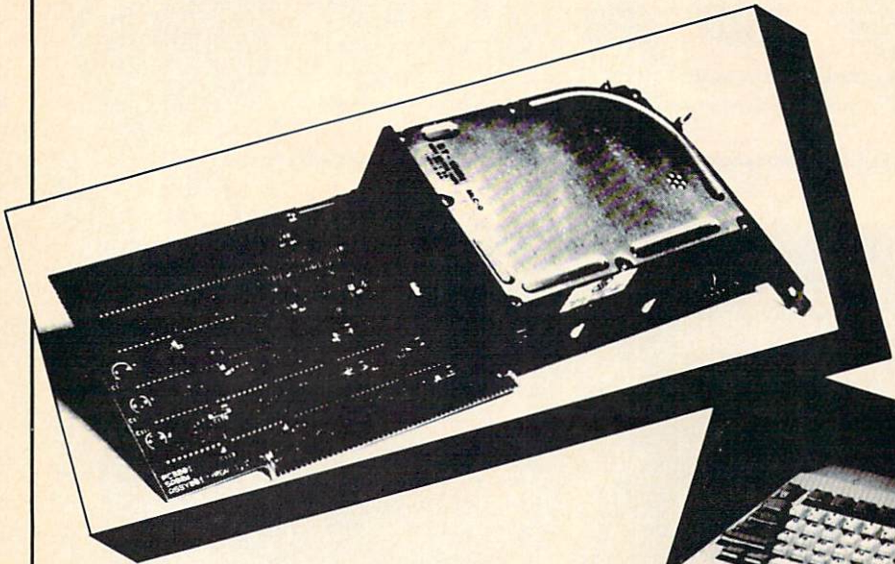
Rather than spoil the surprises waiting for you in this issue, we'll let you explore the rest yourself. Remember that without feedback from you, we can't finetune the magazine to your specifications. Call us between 8:30 and 4:30 EST, or write:

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AMIEXPO LA, NY, ETC.

AmiEXPO Midwest, held in Chicago from July 22-24, attracted 10,429 attendees and 103 exhibitors, making it the largest Amiga-specific convention to date. More than a dozen different conferences highlighted everything from animation to marketing.

AmiEXPO's next stop will be Los Angeles' Bonaventure Hotel, rather than New York as originally planned. The New York show has been pushed up to March, at the Marriott Marquis. Additionally, AmiForums are slated for Orlando in January, Toronto in May, and Northern California in the second half of '89. These AmiForums will offer product exhibitions on a smaller scale, and place an emphasis on educational seminars. Many of these seminars will be geared toward non-Amiga owners in various fields, to show them how the computer can aid them in their professions. For more information on any of these shows, call 800-32-AMIGA or 212-867-4663.

AmiEXPO (see address list, page 22).
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The Viking 1 is designed to expand the Amiga's capabilities for sophisticated applications in which a high resolution, non-interlaced monitor is preferable.

SMOOTH SAILING

As reported in the *Wall Street Journal* on August 10, Commodore's net income for its quarter ended June 30 was $12.2 million (38¢ a share), representing a sixfold increase over the $2.1 million (6¢ a share) earned during the same quarter a year earlier. Sales increased from $190.4 to $215.2 million, or 13%. For the year, net nearly doubled to $55.8 million ($1.75 a share) from fiscal 1987's $28.6 million (89¢ a share).

In the world of big business, this may be nothing to fax your broker about. But it's impressive when you recall—if you can recall—Commodore's five consecutive losing quarters a couple of years back, during which they dropped $273 million and seemingly came as close to bankruptcy as a company can without actually closing its doors. The *Journal* attributed Commodore's resurgence to strong Amiga sales.

Commodore International, 215-431-9100 (see address list, page 22).
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MONOCHROME MONITOR

Commodore and Moniterm have jointly developed the Viking 1, a 19" high resolution monochrome monitor for the Amiga. Its intended purpose is the expansion of the Amiga 2000's reach into the graphic workstation market for applications like desktop publishing, CAD/CAM, and graphic illustration. The 36 lb. monitor offers 1008 x 800 x 2 bit resolution, 72 MHz pixel frequency, and 56 KHz horizontal frequency. Price is $1995.

Moniterm Corporation (see address list, page 22.)
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Supra's FD-10 combines advantages of floppy and hard drives: it stores up to 10 megabytes each on any number of 3½" disks while offering access speeds near those of hard drives.

FLEET FLOPPY

Announced last year but now available for the first time is the Supra FD-10 ($995), a 10 meg removable floppy disk drive for the Amiga. It combines advantages of floppy and hard drives: it can utilize an unlimited number of floppy disks which can hold 10 megabytes of data each, and which can be accessed at speeds approaching those of hard drives (80 ms. average seek time). Up to 1.2 megabytes of data can be transferred per second. The drive, which plugs into the Amiga's SCSI interface, comes with all necessary software and cables.

Supra Corporation, 503-967-9075 (see address list, page 22.)
Circle #294 on Reader Service Card

EXPERT REVISION

The first revision of the *Magellan* expert system generator ($195) will support the ARexx interprocess communication standard. The ARexx interface will be packaged in the revised edition, available in October.

(The *Magellan* software, which runs on any Amiga with 512K, allows users to build knowledge bases through a mouse-and-window graphic interface. Knowledge is stored in an IF-THEN format which allows for easy editing and correcting.)

Emerald Intelligence, 313-663-8757 (see address list, page 22.)
Circle #288 on Reader Service Card

AMIGA GUIDE

Free Spirit will be marketing Adriadne Software's *'Kickstart' Guide to the Amiga* ($24.95) in the US. The book, a best seller in Europe, provides a "step up" to the Amiga from other machines, with an introduction to C programming and a comprehensive explanation of how the machine works in terms of EXEC, AmigaDOS, and graphics.

Free Spirit, 800-552-6777 or 312-352-7323 (see address list, page 22.)
Circle #289 on Reader Service Card

MORE PD DISKS

Comp-U-Save has expanded its Amiga public domain library to more than 600 disks available at $4.00 each, including 14 x-rated collections from Germany and Scandinavia. A catalog is available for a SASE.

Comp-U-Save, 516-997-6707 (see address list, page 22.)
Circle #290 on Reader Service Card

HELP FOR DROPOUTS

Mindscape's *Students at Risk: How Computers and Software Can Help* presents an overview of school- and community-based programs around the country fighting the dropout problem and lists appropriate computer software being used for at-risk students. The booklet is available free of charge to educators.

Mindscape Inc., 312-480-7667 (see address list, page 22).
Circle #251 on Reader Service Card

MIDI CLASS

A six-part class on Building MIDI Programs will be offered for the second time this spring in New York City, and once each spring and fall thereafter. Topics covered include mappers and simple MIDI processors, building a librarian and voice editor, and building a sequencer. The price is $250.

MUSIG, 212-246-7438 (see address list, page 22.)
Circle #254 on Reader Service Card

TELECOM BOOK

The *Handbook of Computer-Communications Standards* (three volumes, $34.95 each) covers the major standard protocol topics, providing the introductory and tutorial text material missing from the actual standards themselves.

Howard W. Sams & Company, 317-298-5400 (see address list, page 22).
Circle #255 on Reader Service Card

IC PROJECTS

For circuit-building buffs:

The IC User's Casebook ($12.95) details more than 100 projects for computer hobbyists. Each chapter takes a casebook approach, spelling out all needed steps. The projects encompass linear and digital devices, timers, and general devices, and utilize readily available parts.

Howard W. Sams & Company, 317-298-5722 (see address list, page 22).
Circle #281 on Reader Service Card

50 CMOS IC Projects ($16.95) consists of digital electronics projects based on the complementary metal-oxide semiconductor family of circuits. (The IC's are popular because they are inexpensive and used with a wide range of voltages.) Schematics and parts lists accompany each project.

TAB Books, 717-794-2191 (see address list, page 22.)
Circle #256 on Reader Service Card

CASIO-AMIGA LINK

C-ZAR-1, an extended version of the *C-ZAR* Editor/Librarian software for Casio keyboards, controls the top of the line Casio CZ-1 via MIDI hookup with the Amiga. The new program simplifies the job of creating operation memories, displaying all preferences onscreen at the same time. The Amiga mouse can be used to drag new sounds into setups, or to point and click on performance controls. Also supported are the CZ-1's "Keyboard Velocity" features, with onscreen sliders controlling the amount of strike velocity routed to each envelope. *C-ZAR-1* is included on *C-ZAR Version 2.0* disks ($195), which include new sounds and preset operation memory files. Registered *C-ZAR* owners can buy the *C-ZAR-1* software

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and manual for $20.00.

Diemer Development, 818-762-0803 (see address list, page 22.)
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COLORS

Star Micronics' NX-1000 Rainbow dot matrix printer ($379) provides multicolor printing capability. Its four-tone ribbon allows users to output in black, red, yellow, blue, orange, green, and violet. Text prints at 144 characters per second in draft mode and 36 cps in Near Letter Quality. Four fonts are selectable from the front control panel: Courier, Sans Serif, Orator I, and Orator II. A paper parking function permits the use of single sheets without moving tractor-fed paper. A cut sheet feeder is available as an option.

Star Micronics, 212-986-6770 (see address list, page 22).
Circle #249 on Reader Service Card

BOARD OF EDUCATION

The Michigan Association for Computer Users in Learning (MACUL) has opened a teachers' BBS on the University of Michigan's CONFER system. The board serves as a public forum for discussion of current trends in computer technology. To join CONFER, write or call Joan McCoy, School of Education, The University of Michigan, Ann Arbor, MI 48109-1259 (phone: 313-763-9497).

MACUL, 313-595-2493 (see address list, page 22).
Circle #272 on Reader Service Card

MIDI CONVENTIONS

New York's second annual MIDI Expo will be held in the Sheraton Centre on December 3-4. At the show MIDI enthusiasts will be able to explore the range of digital music instruments, equipment, and services through product demonstrations and a seminar program covering MIDI basics, sampling techniques, and other topics.

Expocon Management, 203-259-5734 (see address list, page 22).
Circle #273 on Reader Service Card

SLIDE SHOW SOFTWARE

Aegis has begun shipping *Lights! Camera! Action!* ($79.95), their desktop presentation program that combines pictures, animations, sampled sounds, and music into slideshow presentations. The program uses files from any Amiga product that produces an IFF picture (including 4096 color HAM images), any ANIM format animation, IFF sampled sounds, and Aegis *Sonix* music scores. Included are over 40 different screen transitions and special effects, among them nine wipes, flips, fades, and block effects. All Amiga resolutions are supported, as well as Genlock and PAL. One meg of RAM and two disk drives are required.

Aegis, 800-345-9871 or 213-392-9972 (see address list, page 22.)
Circle #286 on Reader Service Card



Star Micronics' NX-1000 Rainbow color printer at left, shown with its Commodore 64 compatible counterpart at right. Speed ranges from 36 to 144 cps.

WORLD OF COMMODORE

The Toronto International Center hosts the sixth annual World of Commodore Show December 1-4. Over 20,000 consumers are expected to attend to buy hardware and software, both Amiga and non, from a variety of vendors.

And right in Commodore USA's backyard, at the Philadelphia Civic Center, the first annual World of Commodore Show U.S.A. will take place November 3-6.

The Hunter Group Inc., 416-595-5906 (see address list, page 22).
Circle #258 on Reader Service Card

MAKE A SPEECH

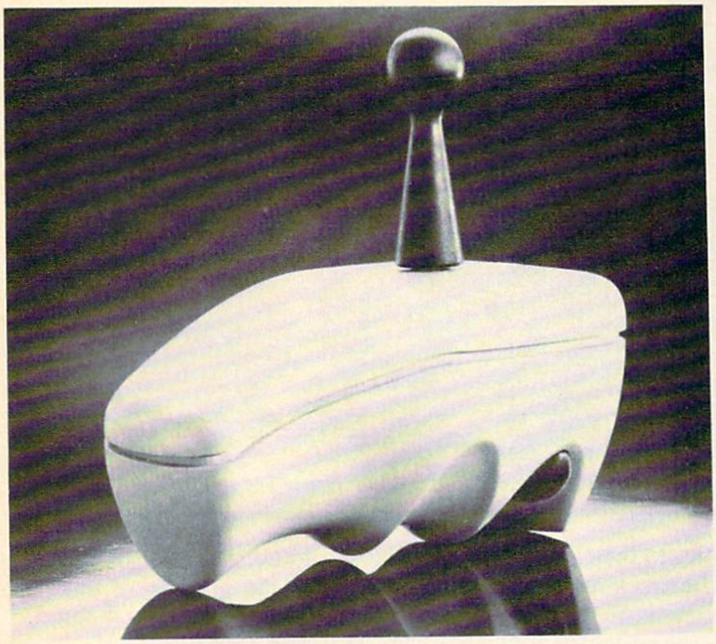
Don't let what happened to Joe Biden happen to you. Based on Robert Shelley's *Pocket Speechwriter* book, *Computer Speechwriter* ($39.95) allows you to create a quasi-original speech in minutes on the Amiga. If you have a subject in mind, you call up the key word index, find appropriate material, and tailor it to your speech; if you have no subject in mind, you can choose from dozens of prewritten speeches on different topics, or combine an opening line, a theme, a few quips, an observation, and a clincher. Included is a speaker's guide full of tips on delivery, timing, preparation, and presentation, covering topics like sizing up an audience and overcoming stage fright. An unconditional money-back guarantee is offered.

Pageant Publishing Co., 514-935-8273 (see address list, page 22).
Circle #267 on Reader Service Card

QUICK FIXES

Microcomputer Troubleshooting & Repair ($21.95) describes ways of making computer equipment more reliable, and saving time and money on repairs. Basic troubleshooting principles are discussed, along with methods of applying them. Along with computers, the book covers printers, modems, monitors, disk drives, and interfaces.

Howard W. Sams & Company (see address list, page 22).
Circle #270 on Reader Service Card



The callouses that come from gripping a hard plastic joystick should be forestalled by Wico's soft, rubberlike Ergostick. The controller is form-fit to the human hand with finger grooves.

ERGONOMIC JOYSTICK

For use with the Amiga among other systems, Wico's Ergostick is form-fit to the human hand with individually sized finger grooves. The soft, pliable material used for the body of the joystick makes it easy to grip. A 90-day limited warranty is included.

Wico Corporation, 312-647-7500 (see address list, page 22).
Circle #257 on Reader Service Card

$14.95 SOFTWARE

Two additions to IntraCorp's line of $14.95 software for the Amiga:

Space Math uses an arcade game to improve math skills. Players 8 and older can compete on 8 levels at 27 difficulty settings.

Pro Football Facts and Predictions, 1988 Edition contains five years of gridiron stats, from 1983 through the January 1988 Super Bowl, with an analysis program to help predict this year's winners.

IntraCorp, 305-252-9040 (see address list, page 22).
Circle #266 on Reader Service Card

THE ABC'S OF C

Advanced C: Tips and Techniques ($24.95) takes a 456-page look at C, stressing portability, execution efficiency, and programming techniques. Chapters are devoted to debugging techniques, C's run-time environment, and arrays and pointers. Techniques are provided from applications like allocating storage for multidimensional arrays at run-time, working with complex C expressions, and speeding up programs with multidimensional arrays.

Hayden Books, 317-298-5400 (see address list, page 22).
Circle #259 on Reader Service Card

3-D GLASSES

Shades of Elvis, poodle skirts, and Joe McCarthy—when used with specially designed Amiga software, Haitex's X-Specs 3D (sic) glasses create the illusion of a 3-D image. The glasses control what each eye sees independently by closing and opening an optical shutter at 60 frames per second. The price is $124.95, for which you get one pair of glasses, an interface that supports two pairs, a disk full of 3-D images, and *SpaceSpuds*, the first game designed for use with the glasses (others are under development).

Haitex Resources, 214-241-8030 (see address list, page 22.)
Circle #293 on Reader Service Card

ACTIVISION CHANGE

Activision has adopted a new corporate name—Mediagenic—to reflect the company's expansion into diversified product lines. The Activision name will continue to be used for the company's action and simulation games.

Mediagenic, 415-329-0800 (see address list, page 22).
Circle #282 on Reader Service Card

CLEAN UP

A box of 10 multipurpose office cleaning towels ($5.95 retail) will be included with every specially marked 10-pack of Fuji MF2HD 3½" disks through October 3 or while supplies last.

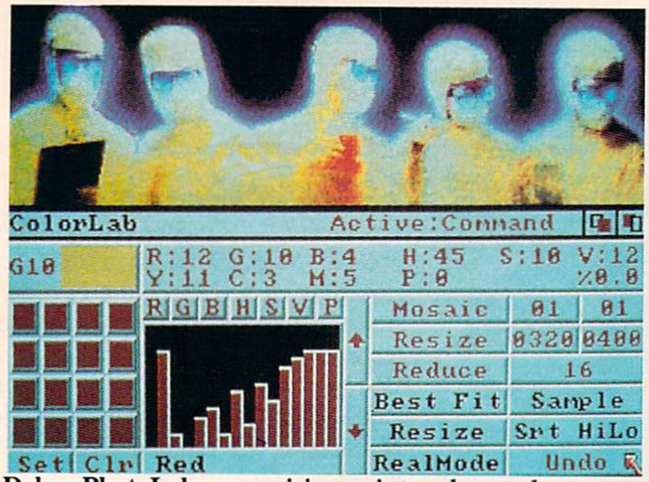
Fuji Photo Film U.S.A., Inc., 800-FOR-FUJI (see address list, page 22).
Circle #250 on Reader Service Card

PAINT/PRINT PROGRAM

The *DeluxePhotoLab* ($149.99) paint and print program integrates the features of a paint program, color processor, and poster maker, providing artists with more colors, larger canvases, greater graphic flexibility, and powerful palette manipulation utilities.



Ten anti-static, pre-moistened, lint-free office cleaning towels will be included with specially marked boxes of Fuji disks while supplies last.





DeluxePhotoLab, *comprising paint, color, and poster programs, offers artists larger canvases and more flexibility.*

The Paint program permits the creation and manipulation of images with eight levels of resolution, using any of the Amiga's graphics modes. Images can be altered with 18 different painting modes like Average, Blend, Add, and Subtract.

The Colors program lets you enhance existing art or digitizations, sorting, separating, and processing the color palette by any of seven parameters: Red, Green, Blue, Hue, Saturation, Value, and Population.

Posters enables you to print out any screen image in any resolution up to 10 x 10'. An anti-alias feature eliminates jaggies on any size image, to produce high quality printouts as small as 1 x 1".

Electronic Arts, 415-571-7171 (see address list, page 22.)

Circle #292 on Reader Service Card

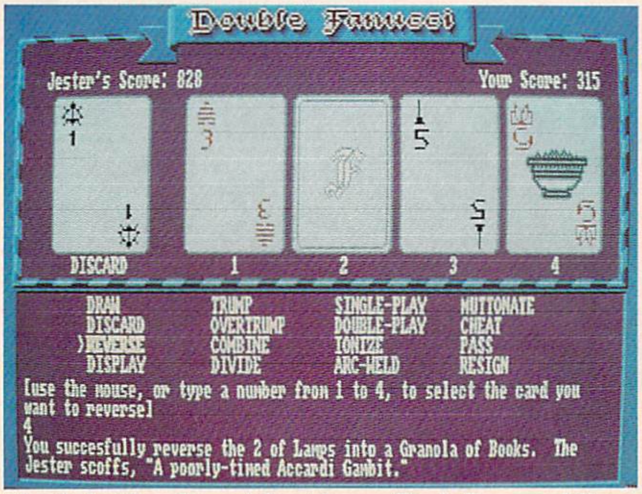
GAMES

The Cubs finally installed lights in Wrigley Field, and Infocom has finally added graphics to their text adventures. Each of the first three Amiga releases in their new Role-Play Chronicles line incorporates role-playing elements while allowing the gamer to become an interactive part of the story.

Journey ($49.99) begins in a village that has endured great suffering for five years. You are a member of a party dispatched to seek the counsel of the great wizard Astrix. On your way, you'll be led across mountains, through caves, and over the sea, constantly encountering the forces of evil mingled with unexpected allies who will aid you in your quest.

A prequel to the *Zork Trilogy, Zork Zero* ($49.95) covers the collapse of the Great Underground Empire. Megaboz the wizard has cast a spell that has destroyed the ruling Flathead family, and you and numerous other fortune hunters vie for the huge reward offered for stemming the curse. Your quest will take you to every corner of the kingdom, from the glaciers of the Gray Mountains to the defoliated Fublio Valley. The game includes more than 200 locations, and as many puzzles as all three previous games put together. Here, *Zork* fans will learn the answers to questions like: what was Dimwit Flathead's castle like? What is it like to play Double Fanucci? And what is the origin of the White House where *Zork I* begins?

Based on James Clavell's novel, *Shogun* ($49.95) thrusts you as John Blackthorne into the upper echelons of feudal Japanese society and the midst of a power struggle between two regents. Your success is more reliant upon your ability to think and make decisions as Blackthorne than on your skill at solving puzzles. Intricate graphics in traditional 16th century Japanese style are used as rewards for solving puzzles and successfully handling situations.





The Role-Play Chronicles (shown: Zork Zero *and* Shogun*) offer an Infocom first: interactive stories with graphics.*

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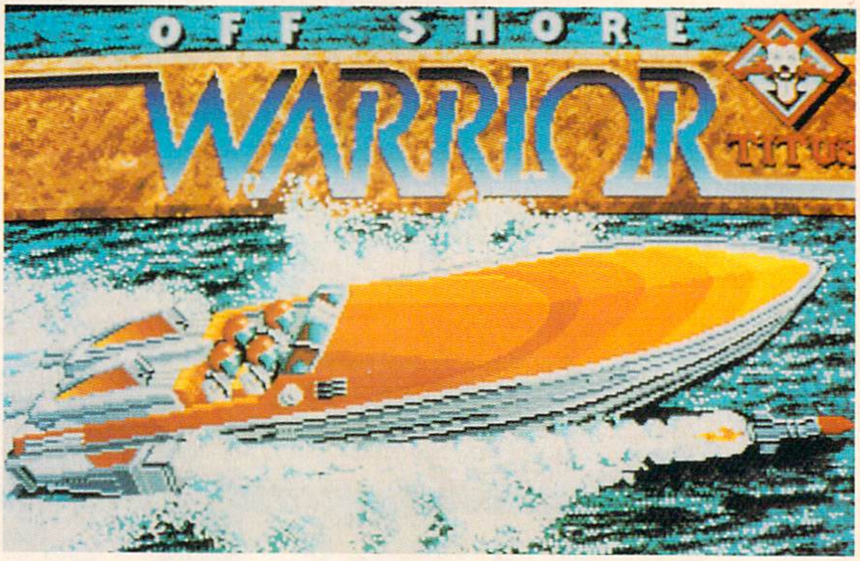
Circle #285 on Reader Service Card

All three games are scheduled for early 1989 release on the Amiga.

Infocom, Inc., 617-492-6000 (see address list, page 22.)
Circle #298 on Reader Service Card

As an *Off Shore Warrior* you participate in a sport which involves piloting enormously powerful boats against your opponents and the natural elements. In gigantic arenas situated on the world's largest lakes, surrounded by thousands of rows of seats, the warriors fight one another while trying to survive the dangers of rocks and waves. The rules are simple: armed with one boat and two missiles, each contestant enters the arena knowing that only one can leave alive. Price is $39.95.

Titus Software Corporation, 818-709-3692 (see address list, page 22.)
Circle #105 on Reader Service Card



Sort of a Rollerball on rudders, **Off Shore Warrior** *has combatants sail their powerful missile-equipped boats into a watery ring of no return.*

From DigiTek, each $34.95:

Western Games ($29.95) lets you compete in down-home events like Armwrestling, Beershooting (fire at tankards held by the town idiots), Quidspitting (expectorate your chew-tobacco into a pan), Dancing (imitate the moves of the saloon go-go girl), Milking, and Eating.

Hole-in-One Miniature Golf's two disks contain 72 holes divided into four courses, ranging from the classic Windmill to the inside of a pinball machine. Up to four players can compete at a time.

In *Powerstyx* you maneuver an onscreen crystal to cut rectangles and squares out of an empty screen to expose a hidden work of art, while avoiding monsters and collecting objects that provide various bonuses. You advance to higher levels by exposing 75% of the screen, forming words out of captured letters, or capturing the elusive Door symbol.

DigiTek, Inc., 813-933-8023 (see address list, page 22).
Circle #252 on Reader Service Card

Two from Scorpion, each $34.95:

Phantasm whisks you, a destitute wanderer, off to a distant moon where you have the opportunity to save the earth. You get to choose which section to save first; to complete each section you must destroy eight reconstitution installations.

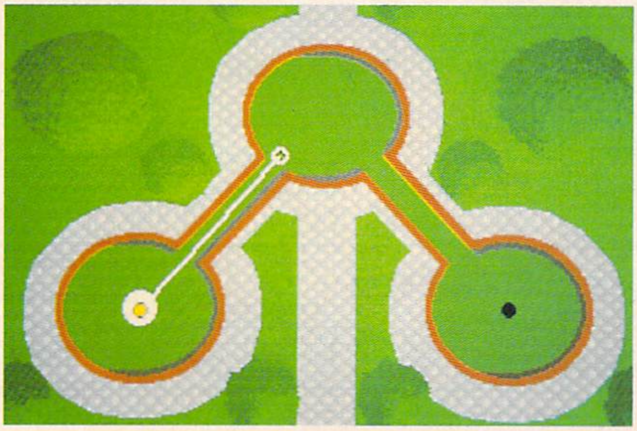
Foundation's Waste offers the player a chance to defeat his captors and escape from a hostile planet in a stolen spacecraft.

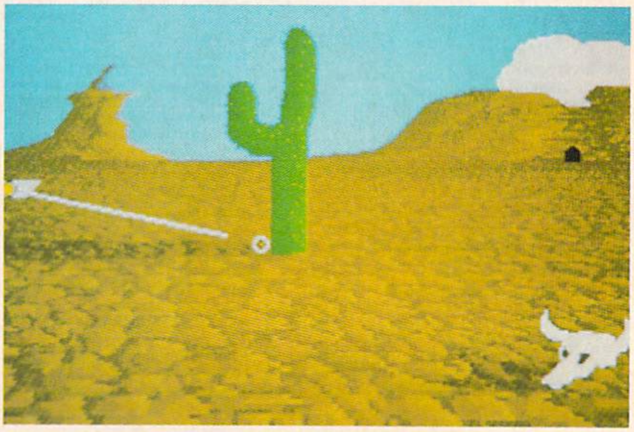
Scorpion, 201-663-0202 (see address list, page 22.)
Circle #102 on Reader Service Card

Co-developed by Larry Bond, Washington naval analyst and co-author of the novel "Red Storm Rising," *Harpoon* depicts the final confrontation between NATO and the U.S.S.R. Using a database of more than 100 weapon systems, the player undertakes the role of the Commander of NATO's North Atlantic Task Force, pitted against the Russians' powerful Northern Fleet headquartered in Murmansk. Included are 10 different battle scenarios personally crafted by Bond. Scheduled for fourth quarter release.

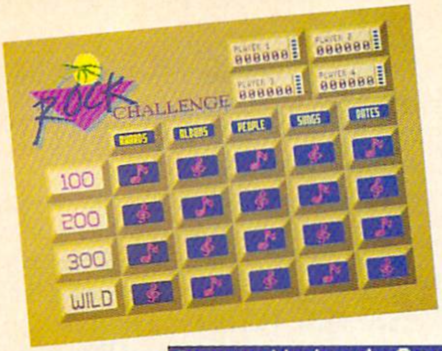
Three-Sixty Pacific, Inc., 408-879-9144 (see address list, page 22.)
Circle #104 on Reader Service Card

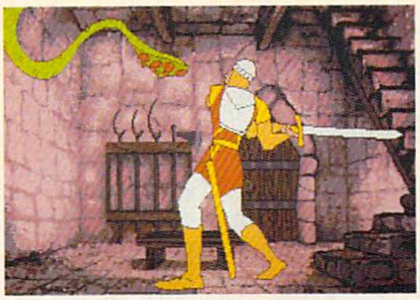
In *Balance of Power: The 1990 Edition* ($49.95), the player assumes the role of the President of the United States or the General Secretary of the Soviet Union. His goal is to complete eight years in office (1989-1997) without initiating a nuclear conflict, and to accumulate more prestige points than his opponent. A multipolar level, new





Hole-in-One Miniature Golf's *four courses range from the classic Windmill to the interior of a pinball machine.*







New games ready from ReadySoft, clockwise from top left: **Rock Challenge** *(tests your music IQ),* **Dragon's Lair,** *and* **Scary Mutant Space Aliens from Mars.**

to this sequel, allows the non-superpower countries of the world to pursue active foreign policies, requiring you to track the moves of your allies. Scheduled for release in November (just when we find out who gets to play the game for *real* for four years).

Mindscape, 312-480-7667 (see address list, page 22.)
Circle #106 on Reader Service Card

Four new Amiga games from ReadySoft:

In *Cosmic Bouncer* ($29.95) you're a tennis ball brought to life, bouncing through 20 levels of action.

Rock Challenge ($39.95) tests your knowledge of music from the 50's to the present, in five categories. Additional question disks will be made available.

Scary Mutant Space Aliens from Mars ($39.95) is a graphic adventure that presents you with such challenges as finding your way through the Maze of Neptune, operating a Dryfon 3 zapometer, and collecting the right tools to dismantle the Ion-Beam Doomsday device.

Dragon's Lair ($59.95), a multidisk adaptation to the laser disc arcade game, lets you control Dirk the Daring on his quest to rescue Princess Daphne from Singe the Dragon. Your journey takes you through Singe's castle and the caverns below.

ReadySoft, 416-731-4175 (see address list, page 22.)
Circle #101 on Reader Service Card

Helter Skelter is 80 screens of bouncing balls and digitized sound effects, plus a screen designer that allows players to create 48 further screens.

Audiogenic Software (see address list, page 22.)
Circle #295 on Reader Service Card

Like its predecessor, *Strip Poker II* ($39.95) lets adults enjoy the strategy of 5-card draw poker while watching either of two female opponents disrobe. The difference is the updated digitized graphics which incorporate modern scanning technology. Additional digitized data disks are planned.

Artworx Software Company, 800-828-6573 or 716-385-6120 (see address list, page 22.)
Circle #296 on Reader Service Card

Originally a text adventure for the C-64 and Apple II, Free Spirit has released *Sex Vixens from Space* for the Amiga, adding over 30 graphic screens and retaining the humor and challenge of the original version. The player is Captain Brad Stallion, owner/operator of a one-man space vehicle called the Big Thruster. The Federated Govern-



Gorbachev and Reagan lookalikes promote **Tetris,** *the first Soviet game software available in the U.S. (Maybe they'll accept* **Star Wars** *in return?)*

ment has sent him in search of The Tribe, a colony of sex-starved female clones believed to be responsible for repeated raids on the male population. He must locate the Vixens and destroy their deadly Sex-Ray Gun. Price is $39.95; shipping is free.

Free Spirit Software, 800-552-6777 or 312-352-7323 (see address list, page 22.)

Circle #297 on Reader Service Card

In *Battle Chess* ($49.95), each piece has a unique method of attacking its foes, and acts it out in three dimensional animation. When a knight takes a pawn, for example, the mounted, armored warrior sallies forth to slay the opposing foot soldier. Included is an opening library of 30,000 moves, and a variety of settings to let players compete against the computer or other players, or let the computer play itself. A modem capability allows gamers in different locations to link up.

Interplay, 714-549-2411 (see address list, page 22.)

Circle #299 on Reader Service Card

Craps Academy ($39.95) teaches the ins and outs of professional dicing, including payoffs, house percentages, betting systems, and play strategy. You can choose the rules of your favorite gambling center, and even simulate a specific casino.

MicroIllusions, 818-360-3715 (see address list, page 22.)

Circle #300 on Reader Service Card

Coming soon is an Amiga adaptation of *Tetris,* designed by two Soviet computer programmers and the first entertainment software from the U.S.S.R. to be available in the U.S. Spectrum HoloByte has enhanced the basic game with background scenes from the Soviet Union. Based on the arrangement of four squares into various shapes, the game requires the player to form solid rows.

Spectrum HoloByte, 415-522-3584 (see address list, page 22.)

Circle #103 on Reader Service Card

Paragon Software has signed an exclusive agreement with Game Designers' Workshop to bring *Traveller,* the science fiction role playing game, to the home computer. The first adventure in the series will focus on a sparsely settled area of the Imperium called the Spinward Marches, surrounded with cultures often characterized as "other than friendly." The computer game will appear for the Amiga around March 1989.

Paragon Software, 412-838-1166 (see address list, page 22.)

Circle #253 on Reader Service Card

From Rainbird:

Enlightenment ($24.95) concerns the return of the evil wizard Acamantor to Belorn, 103 years after he was banished by Hasrinaxx the Druid. To defeat him once again, Hasrinaax must make his way through the ten lands of Belorn and Acamantor's five level dungeon, aided by the powers of earth, air, water, and fire.

Black Lamp ($24.95) follows Jolly Jack the Jester's quest to win the princess's hand by defeating a forest full of skull-dropping buzzards, spitting witches, and other beasties, and ultimately taking the black lamp away from the fire breathing dragon that guards it.

The Universal Military Simulator ($49.95) makes it possible to recreate the battles of Gettysburg, Arbella, Hastings, Marston Moor, and Waterloo, with complete and accurate locales, geographical features, combat troops, and armaments. A battle can be recreated as it occurred, or the original parameters can be altered to explore "what if" scenarios. The program's 3-D graphics system lets you view the action from any angle.

Carrier Command ($44.95) puts you at the bridge of a futuristic vessel as you attempt to capture the enemy's islands and destroy its forces. You're aided by a squadron of remote fighters and an amphibious assault division, up to four of each controllable at once. You protect your ship with defense drones and a 360 degree turret mounted laser cannon with telephoto tracking.

Rainbird, 415-322-0412 (see address list, page 22).

Circle #264 on Reader Service Card

Adaptations of two Konami arcade titles:

Contra pits mortals against intergalactic badman Red Falcon in a guerrilla war in the Amazon jungle.

Rush N' Attack sends you, a guerrilla fighter armed only with a knife, behind enemy lines to rescue dozens of POW's hidden in an isolated camp. If you can't imagine how this is possible, give Sylvester Stallone a call.

Konami, 312-595-1443 (see address list, page 22).

Circle #265 on Reader Service Card


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Phone: 818-709-3692

Wico Corporation
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Niles, IL 60648
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From Electronic Arts:

In a future threatened by galactic war, *Reach for the Stars* ($39.95) gives you the responsibility for the propagation of your race. You must search for planets to colonize, manage your people's economic and social forces, and develop a strong space navy. Play all your cards right, and you'll become ruler of the galaxy.

Rockford ($29.99) lets you follow the famed archeologist of *Boulder Dash* around the globe in search of the Pharoah's gold pieces, the Emerald Erasmus, and the Apples of Eternal Youth.

The computer which controls the highways connecting the moons of Armegeddon has gone haywire, altering some of the magnetic side panels that keep vehicles on the roads. The result is *Roadwars* ($29.99), which you must win against the killer sparks, spikes, barriers, and vicious aliens.

Electronic Arts, 415-571-7171 (see address list, this page).

Two games to be distributed by Electronic Arts under its affiliated labels program:

DataSoft's *Cosmic Relief: Prof. Renegade to the Rescue* ($34.95) sends players in quest of K.K. Renegade, who 40 years ago predicted the arrival of a huge asteroid. Now that the space rock has been sighted, the Professor may be the only man who can save the Earth. You must surmount such bizarre obstacles as stone snakes, reptilian birds, and acid storms, as well as find and utilize such curiosities as unicycles and vacuum cleaners to complete your task. Once you find Renegade, you'll help him build an anti-asteroid deflector.

Adapted by Leisure Genius from the board game, *Risk* allows Amiga imperialists to play against friends or against computer opponents who employ a variety of strategies. All the popular game variations are possible, such as US, UK, and short game.

Electronic Arts, 415-571-7171 (see address list, this page).

Circle #274 on Reader Service Card

Electronic Arts has made a minority investment in Strategic Simulations, Inc., acquiring the rights to distribute SSI software in the United States and Canada. The first EA/SSI releases for the Amiga will be an Advanced Dun-

geons and Dragons Product:

Heroes of the Lance ($29.95), derived from Dragons of Despair, the first Dragonlance game module, recreates the epic battle between good and evil on the world of Krynn. The player guides eight characters into the ruins of the temple Xak Tsaroth to retrieve the Disks of Mishakal. This entails defeating the monstrous Draconians and surviving attacks from dwarves, skeletal undead, and other terrors.

Strategic Simulations, Inc., 415-964-1353 (see address list, page 22).
Circle #275 on Reader Service Card

Consisting of 20 different and increasingly difficult levels, *Warlock* ($34.95) nonetheless requires minimal hand-eye coordination. Instead, quick payoffs and endearing characters encourage novice to advanced players to continue the action/adventure until the Warlock achieves his goal of finding the stolen Karna.

Three-Sixty, Inc., 408-879-9144 (see address list, page 22).
Circle #263 on Reader Service Card

From Broderbund:

Based on the Atari coin-op classic and, amazingly enough, the first home computer adaptation of the movie to be published in North America, *Star Wars* ($29.95) puts the player in the role of Luke Skywalker, piloting an X-Wing Fighter in an attack on the Empire's Death Star.

Downhill Challenge ($24.95) simulates four styles of ski racing: downhill, slalom, giant slalom, and jumping. Each event offers three skill levels.

Broderbund Software, 415-492-3200 (see address list, page 22).
Circle #277 on Reader Service Card

The following from Epyx, $39.95 each unless otherwise noted. The following were scheduled to be available by the time you read these words:

Battleship ($29.95) brings the famous board game to the computer screen, improved with graphics and digitized sound effects. Players can see shrapnel tear into vessels, fires rage on deck, an holes appear broadside.

Though it sounds like a nuclear showdown, *Final Assault* takes the player on a mountain climbing expedition up some of the world's most treacherous peaks. Players must select their gear from over 50 available items—one wrong choice could be the difference between life and death.

Mind-Roll involves manipulating a bouncing and rolling ball through 3-D walls, floors, and ramps. Sharp turns, maze races, and obstacle courses must be negotiated.

The latest in Epyx's Masters Collection of software for the advanced gamer, *The Legend of Blacksilver* pits you against the evil Baron Targas, who has kidnapped the King and plans to submerge the existing continent and raise one from the ocean depths, populated with creations of his twisted mind. To stop him, players must travel through the kingdom (rife, of course, with monsters, sorcerors, natural disturbances, etc.), rescue the King, and fashion a sword of Blacksilver with which to capture Targas.

Scheduled for fourth quarter release:

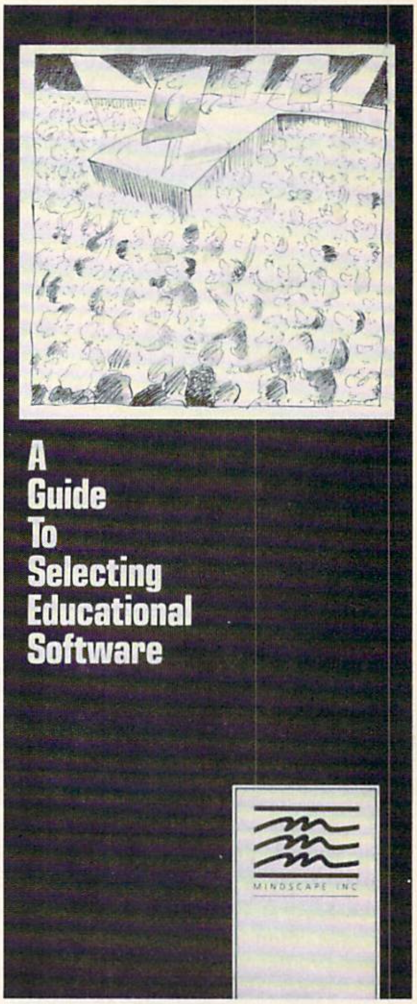
The Games—Summer Edition tests world class athletes in events like springboard diving, uneven parallel bars, velodrome sprint cycling, the hammer throw, hurdles, archery, and the rings. Camera angle views are designed to give the feeling of network TV coverage.

Street Sports Football, like previous titles in the series, forces players to put up with real life obstacles like puddles, oil slicks, and inconveniently parked cars. Plays can be picked from a computerized playbook, or designed from scratch.

Technocop, designed by U.S. Gold and distributed by Epyx, matches the Enforcers, a technologically advanced police force, against the international crime family known as D.O.A. The good guys' weapons include criminal radar detectors, .88 magnums, and V-Max, the most advanced auto ever built.

Another U.S. Gold design, *Sports-a-Roni* ($24.95) consists of events like a sack race down the streets of Naples, balancing pasta plates near the Leaning Tower of Pisa, climbing an olive oiled pole, and pillow fighting in a gondola.

Epyx will distribute seven games by UBISoft, the French software house. The first titles will be *Trails of Honor,* released as part of Epyx's Masters Collection (see above) and involving the efforts by the rightful heir to the throne of a French kingdom to save his people from a false monarch; and *Ice Trashers*, a futuristic combination of ice hockey and soccer played amidst explosive devices, bottomless pits, and other dangers.



Free guide to the basics of evaluating and selecting educational software.

Epyx, Inc., 415-366-0606 (see address list, page 22).
Circle #278 on Reader Service Card

MicroIllusions has acquired the rights to release games for the Amiga starring a number of Hanna-Barbera characters. *The Flintstones, The Jetsons, Scooby-Doo,* and *Johnny Quest* are scheduled for fourth quarter release.

MicroIllusions, 800-522-2041 or 818-360-3715 (see address list, page 22).
Circle #279 on Reader Service Card

GUIDANCE DEPT.

In "A Guide to Selecting Educational Software," Mindscape outlines the basics of software evaluation and selection. A free copy of the leaflet is available for a self-addressed, stamped envelope; organizations and institutions

Continued on page 81

LICENSED TO PLAY

Amiga Entertainment Developers Look to Other Media for Inspiration

By Arnie Katz and Joyce Worley



John Madden coaches the programmers of the game bearing his name on some fine points of pigskin placement.

Critics often comment on the cyclical nature of styles and fads. Miniskirts are back after a decade, and long dresses will probably replace them, again, within two years. Dramas replace sitcoms on T.V. and then sitcoms come back and push the dramas off the tube.

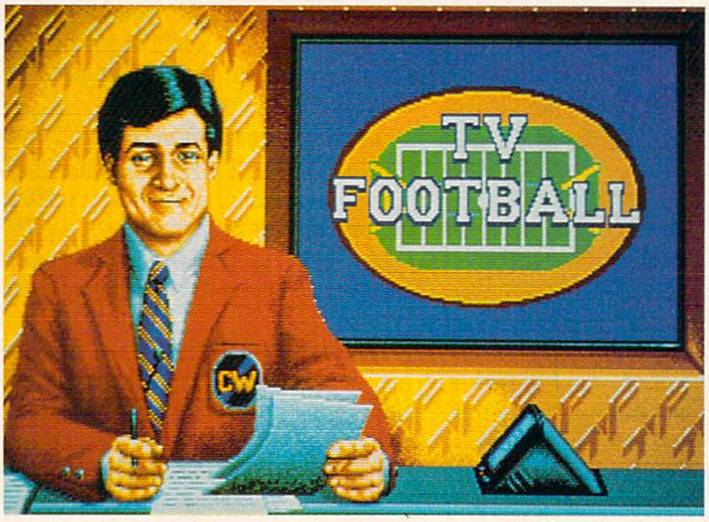
Veteran computer gamers know that software styles are equally cyclical. Why, even video games have crawled off the fad marketing scrapheap to attain renewed mass popularity!

More games based on licenses are in development now than in the entire history of computer software. After concentrating on wholly original concepts for several years, publishers are returning to properties created for other mass media as a source of game themes.

During the 1982-1984 period, the number-one buzzword among software publishers was "license." Virtually every company in the field had the same prescription for success: Buy a license with proven mass appeal in another medium, scrape together a game to carry the license, and pour the product into the distribution pipeline.

Sometimes, the formula worked. *Spy vs. Spy* (First Star), *B.C.'s Quest for Tires* (Sierra), *Donald Duck's Playground* (Sierra), and *Ghostbusters!* (Activision) all became big computer gaming hits.

But sometimes, it didn't work very well at all. *Robots of Dawn* (Epyx), *Dallas* (DataSoft), *I, Damiano* (Bantam Electronic), *Perry Mason* (Telarium), and *Superman* (First Star) didn't sell particularly well despite the familiar names. Many others didn't even make it to the home computer screen. "The Pink Panther," "The Martian Chronicles," "Kramer vs. Kramer," and "Three Days of the Condor" are among the licenses which were bought but never turned into viable games. In several cases, the publisher did not survive the economic drain of unsuccess-



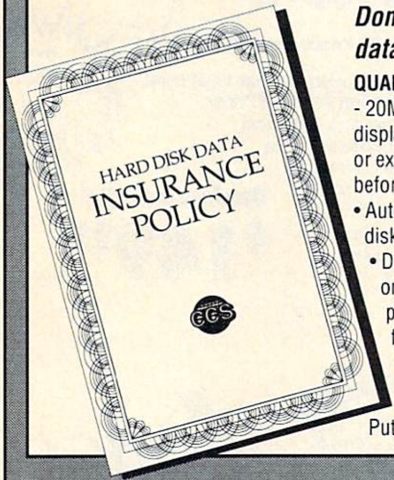
Not all licensed team sports games involve a superstar association. Cinemaware's **TV Football** *will be in stores in time for gridiron action this winter.*



A movie/TV adaptation available already is **The Three Stooges,** *a humorous electronic boardgame comprising several action contests. (See last issue's full-length review.)*

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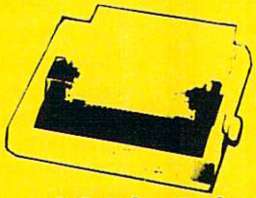
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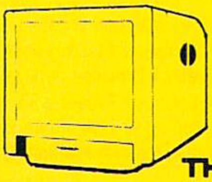
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fully playing the licensing sweepstakes.

Then, in 1985, software companies turned their backs on licensing almost as abruptly and unanimously as they had embraced the strategy. Several factors caused this industrywide shift:

• **Too Many Failures.** There's nothing like a flop to make a nervous executive think twice about laying out huge sums of money on speculation.

• **The Video Game Crash.** The tremendous unit sales potential of a hit video game cartridge figured prominently in many publishers' calculations. Removing that income source slashed the amount software makers could afford to pay for a license.

• **Licensors made unrealistic demands.** As the publishers' ability and willingness to pay diminished, licensors raised the ante. Sellers pegged asking prices to video game sales without understanding that the computer field draws from a much smaller consumer base.

• **De-emphasis of Games.** Following the video game crash, retailers and distributors cooled on entertainment software. Companies could not justify paying big fees for licenses when the market for funware appeared soft.

A few companies continued to produce licensed games. Datasoft scored well with *Bruce Lee*, Infocom had a hit with *The Hitchhiker's Guide to the Galaxy*, and Simon & Schuster generated six-digit unit sales with *Star Trek: The Kobayashi Alternative.*

Activision (now Mediagenic) also bucked the 1985-1987 trend with licensed computer games based on "Alien," "Labyrinth," and "The Transformers." *Labyrinth*, a fine design, suffered from the film's box office failure, and *Transformers* lost the market created by the cartoons and comic books because it did not express the concept very well.

Alien accurately mirrored the smash movie, but it never caught on the way Mediagenic hoped. It may have simply reflected the general downturn in computer game sales at that time.

From Arcade to Home

The first source of licensing that made a comeback was the coin-op industry. In the mid-1980s, the age difference between the typical computerist and the average arcade-goer stretched to almost 20 years! Most publishers felt that games for one group wouldn't appeal to the other.

The late 1987 Video Game Renaissance radically changed the situation. Suddenly, action and action-strategy games were back in vogue. The sales of cartridges based on arcade hits impressed computer software companies, so they tried a few coin-op translations, partly to counter encroachment from video games. Last year, *Marble Madness* (Electronic Arts) and *Gauntlet* (Mindscape) led a parade of coin-op winners straight from the neighborhood arcade to the software best seller list.

Technology is especially favorable for converting play-for-pay machines into disks for the Amiga. Many companies use hardware based on Amiga technology for their coin-op machines, so coding the home edition is a surprisingly straightforward process.

Arcadia is one of the leaders in bringing coin-op designs to the Amiga market. It recently published the first three in a series of titles derived from its arcade line.

Perhaps the most unusual entry is *Rockford,* which was a license derived from the 1983 hit *Boulder Dash* (First Star). Other available Arcadia programs for the Amiga are *Roadwars* and *Aaargh!* The former is a head-to-head race to clear objects off a high-tech, scrolling highway, while the latter casts the player as a monster who ravages the countryside and terrorizes the populace.

Mindscape has also announced ambitious plans. The company, which already has a deal to bring Atari coin-ops to home gamers, has inked a similar agreement with Sega. According to company president Roger Buoy, Mindscape will publish quite a few programs based on coin-op licenses in the next year.

Superstars of Sports

The sports software field has two types of licenses. In the first category are authorizations which permit the publisher to use logos of authentic teams and/or the names of actual athletes in the product. The other is a superstar endorsement placed on a sports product as a symbol of its excellence.

MicroLeague Baseball (MLSA), *NBA* (Avalon Hill), *Pure-Stat Baseball* (Software Simulations), and *Full Count Baseball* (Lance Haffner Games) are some of the many games which have certification from the leagues and unions of big time sports. *APBA Major League Players Baseball* (Random House) has these licenses, plus one based on the non-electronic statistical sports simulation, APBA Baseball Master Game, published by the APBA Company.

Earl Weaver Baseball may not have been the first sports game with an endorsement license, but Electronic Arts' success seems to have opened the floodgates. Now many products are based on both authorization and an endorsement licenses.

Recent sports games with endorsement licenses include *Shirley Muldowney's Top Fuel Eliminator* (Cosmi) and *John Elway's Quarterback* (Melbourne House). Neither is available for the Amiga at this writing, but both could make their debut on the system during 1989 if demand warrants.

A pair of licensed baseball games are



Met's catcher Gary Carter, one of the most marketable sports figures in the endorsement game, examines **The Sporting News Baseball** *along with Epyx executives.*

coming from major publishers this winter. *Sporting News Baseball* (Epyx) should be out just in time for Christmas. Mediagenic has not yet published the Amiga version of *Pete Rose Pennant Fever* (under the Gamestar label), but first-half 1989 looks feasible.

The one- or two-player *Sporting News Baseball* mixes arcade-style action with statistics. The onscreen athletes hit, field, run, and pitch according to their 1987 real-life statistics. Split screen visuals, designed to resemble the camera angles of televised baseball, make *Sporting News Baseball* less static and, therefore, more involving than games which show the entire field from an unvarying perspective.

Pete Rose Pennant Fever, designed by Scott Orr and the Gamestar team, is the latest in the series of action-strategy baseball programs which began with *Starleague Baseball* and continued with 1987's *Championship Baseball*. Besides a full complement of visual trimmings and tons of onfield realism, *Pete Rose Pennant Fever* includes a General Manager mode in which the challenge is to build an expansion franchise into a pennant winner.

John Madden Football (Electronic Arts), due for the Amiga in the 4th quarter, is a spiritual cousin of *Earl Weaver Baseball*. This action-strategy program allows coaches to direct squads of NFL players, whose performances reflect their statistics in the previous season. John Madden is also on hand to dispense sage counsel to gamers who don't know whether it's time for a long pass or a triple reverse.

Not all the forthcoming licensed team sports games involve a superstar association. *Pure-Stat Football* (Software Simulations) and *TV Football* (Cinemaware) will both be in stores in time for forming leagues and running replays this winter.

Pure-Stat Football is the latest statistical simulation by the reknowned Ed Daniels, who created *Pure-Stat Baseball* (Software Simulations) and *Superbowl Sunday* (Avalon Hill). It features the most extensive statistic base ever employed to create a pigskin program, plus outstanding graphics by the same artist who did the visuals on MLSA's *MicroLeague Baseball II*.

Designer/producer John Cutter applies the Cinemaware magic to the gridiron with spectacular results in *TV Football*. All the colorful trimmings and visual excitement of National Football League telecasts can be enjoyed on the Amiga gaming screen with this ground-breaking product.

For further information on any of the games mentioned in this article, contact the appropriate companies:

Arcadia
711 West 17th Street
Mesa Business Center
–Unit 9G
Costa Mesa, CA 92627
Phone: 714-631-1001

Avalon Hill
4517 Harford Road
Baltimore, MD 21214
Phone: 301-254-9200

Cinemaware Corporation
4165 Thousand Oaks Blvd.
Westlake Village, CA 91362
Phone: 805-495-6515

Cosmi
415 North Figueroa Street
Wilmington, CA 90744
Phone: 714-240-8985

Data East USA, Inc.
470 Needles Drive
San Jose, CA 95112
Phone: 408-286-7074

Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
Phone: 415-571-7171

Epyx, Inc.
600 Galveston Drive
P.O. Box 8020
Redwood City, CA 94063

Gamestar
3885 Bohannon Drive
Menlo Park, CA 94025
Phone: 415-329-0500

Infocom, Inc.
125 CambridgePark Drive
Cambridge, MA 02140
Phone: 617-492-6000

Lance Haffner Games
P.O. Box 100594
Nashville, TN 37210
Phone: 615-242-2617

Melbourne House
711 West 17th Street,
Unit G9
Costa Mesa, CA 92627
Phone: 714-631-1001

MicroLeague Sports Association
2201 Drummond Plaza
Newark, DE 19711-5711
Phone: 302-368-9990

Mindscape
3444 Dundee Road
Northbrook, IL 60062
Phone: 312-480-7667

Random House
201 East 50th Street
New York, NY 10017
Phone: 212-872-8032

Software Simulations
959 Main Street
Stratford, CT 06497
Phone: 203-377-4339

Strategic Simulations
1046 N. Rengstorff Ave.
Mountain View, CA 94043
Phone: 415-964-1353

Boardgames Go Computer

The king of the family/social boardgames is coming to the Amiga. Through an affiliated label agreement with England's Virgin Games, Electronic Arts is distributing *Monopoly* in the United States. The Amiga edition features animated tokens and an unusual pseudo-3-D view of the board.

Scrabble, Risk, and *Scruples*, also developed by Virgin in Great Britain, will be released in this country for the Amiga early next year.

Scrabble, playable against human or computerized opponents, includes a 24,000-word dictionary. It even has such unexpected frills as the ability to juggle the tiles on the rack to make it easier to visualize words.

Computer opponents in *Scruples* have unique personality profiles which can be studied prior to actual play. All the original questions from the non-electronic game are incorporated into this lively game for one or more.

Risk is based on the classic Parker Brothers game of international conquest. The Amiga edition includes all the major rules variations developed for the boardgame, plus a module to concoct totally new ones.

Several companies have produced software based on "Dungeons & Dragons." The TSR, Inc. product, the most significant game invented in the mid-twentieth century, has thus far resisted computerization.

Strategic Simulations is the latest to purchase this potentially priceless license. The company is pulling out all the stops to develop a complete line of games based on "Advanced Dungeons & Dragons."

The first two products, due in time for the holiday season, are *Heroes of the Lance* and *Pool of Radiance*. The former is an action-adventure set in TSR's "Dragon Lance" fantasy world, while the latter is a roleplaying fantasy quest designed in cooperation with the creators of "Advanced Dungeons & Dragons." SSI is also developing a program which assists the dungeon master in creating random encounters during the course of an otherwise non-electronic game of "Advanced Dungeons & Dragons."

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niques in modern computer games, perfected by Cinemaware, makes the movies a natural source of license-worthy properties.

RoboCop and *Platoon* (both Data East) are joystick-driven adventure games based on their movie namesakes. Both feature excellent multi-screen graphics which thrust the computerist into the thick of intense action.

Already in the stores is *The Three Stooges* (Cinemaware), a highly humorous "electronic boardgame." The computerist must master a collection of entertaining action contests to help the slap-happy trio earn enough money to save the orphanage.

First Row Software is readying titles based on two television series, "Twilight Zone" and "The Honeymooners."

Twilight Zone is the unifying label for a series of adventures that embodies the same adult approach to fantasy and the supernatural which made Rod Serling's show a video classic. Mike Breggar is the designer of the first *Twilight Zone* disk, scheduled for release by the time this issue reaches you.

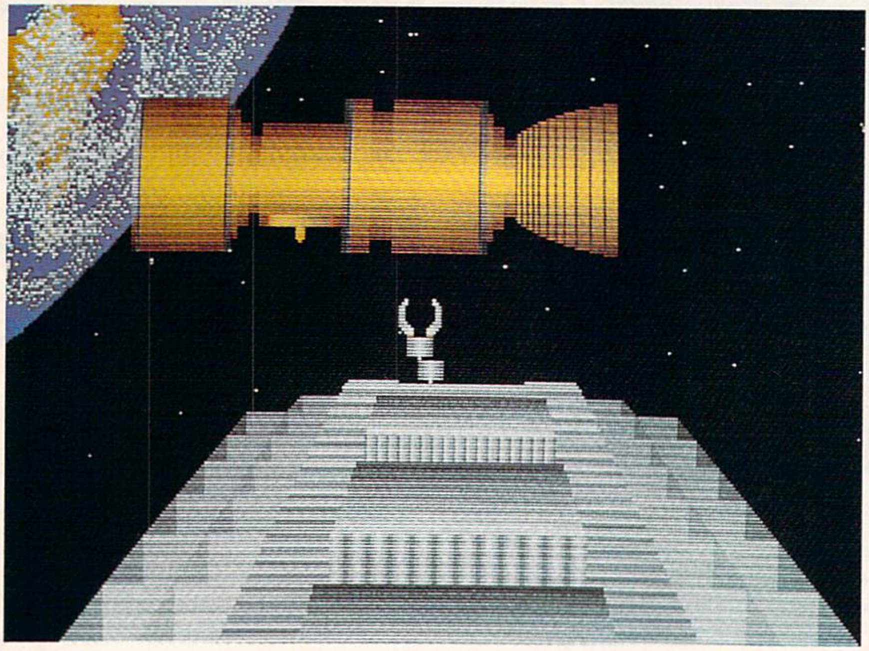
The Honeymooners, also by Breggar, is an anthology of arcade contests derived from the sitcom's characters and incidents. First Row is hoping to have this available by Christmas, but the release date could slip back to first quarter of 1989.

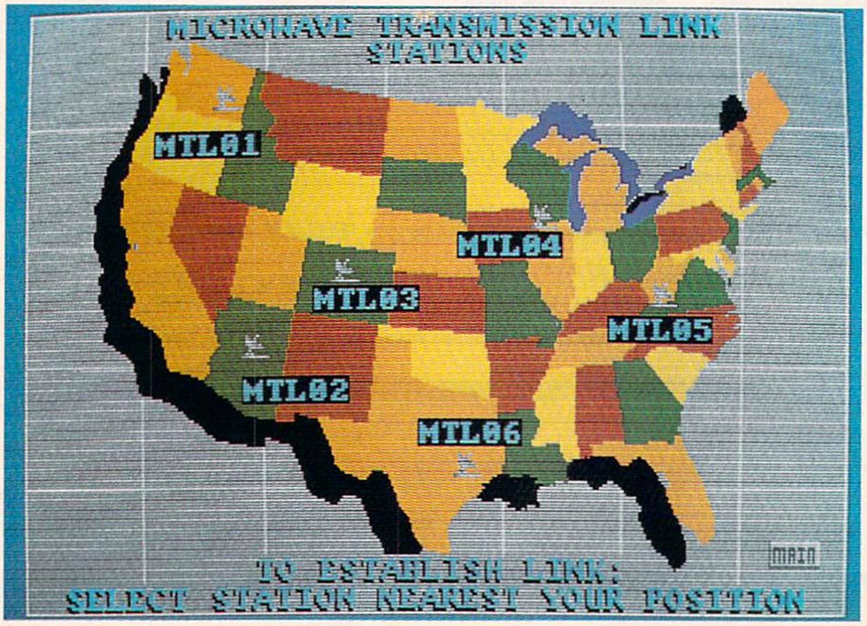
Shogun (Infocom) is based on the T.V. miniseries and the novel which inspired it. The solitaire player becomes James Clavell's hero, John Blackthorne, in 16th century Japan.

MicroIllusions has licensed four cartoon television series from Hanna-Barbera. Games based on "The Flintstones," "Scooby-Doo," "Johnny Quest," and "The Jetsons" will be ready for play on the Amiga by the end of 1989. Younger computerists are probably the main target audience for these games.

Comics on the Computer

The most frequently licensed char-





DEFCON 5
Cosmi
Amiga with 512K
Disk; $39.95

Call it "Strategic Defense Initiative" or "Star Wars," the satellite-based defense network is the most controversial government proposal since the personal income tax. *Defcon 5* ("Defense Condition 5," the military term for peace), offers an "inside" look at how such a system might operate if the US deployed it early in the next decade.

This action-strategy game is Cosmi's latest "computer-computer" game, following *The President is Missing* and *Chernobyl.* This series turns a necessity into a virtue by making a game out of the player interface.

It's a thought-provoking concept. The biggest barrier to fostering intense personal involvement in computer strategy games is the computer itself.

The player must manipulate the computer interface to make anything happen. Many gamers find it hard to become totally involved with a fantasy quest or a boxing match while worry-



Defcon 5's ***maps and monitor screens provide the vicarious thrill of directing an intricate defense network.***

acter in electronic gaming, Superman, is coming back for another try. Jerry Siegel and Joe Schuster's Man of Steel previously starred in an Atari 2600 cartridge and a First Star home computer game (as well as a coin-op and a pinball machine).

Now Great Britain's Tynsoft is trying DC Comics' flagship hero again. Its interactive computer comic book is called *Superman: Black Monday.* Created by the American Subway Software design team, the action-strategy game will be programmed in England for release this month.

Rumors persist that Batman will soon swing across the computer screen. A game featuring the Darknight Detective previously appeared in Europe, but it was not brought to the US. The rumored project will probably relate to the forthcoming film with Michael Keaton and Jack Nicholson as much as to the four-color adventures.

Another likely source of comics-inspired games is Disney software. The Walt Disney division has announced no specific publication schedule, but it plans to develop a full line based on its myriad of company-owned licenses.

Coming Attractions

The games discussed in this article are only the first ripples of what could become a tidal wave. Software companies have bought dozens of potentially valuable properties which will not even begin development until late in 1989.

Understandably, these companies don't want to tip their hand to potential publishers of non-licensed "me, too" programs. That's why it is tough to talk about specific licensed games beyond March, 1989.

What can be said, however, is that the licensed game category will keep expanding at least through the end of 1989. So it probably won't be long until you see your favorite book, movie, comic book, boardgame, or celebrity spotlighted in a computer game. □

---

ing about controller or keyboard command control. The required procedures of most gamers bear little relation to swinging a sword or throwing a right cross.

Defcon 5, however, transforms the player's computer into the terminal which orchestrates the many components of the US Ballistic Missile Defense (BMD) System as it might be deployed in the mid-1990s.

Defcon 5's routine of play is very similar to ordinary computer operation. It is surprisingly easy to peer at the multicolored satellite maps and feel the vicarious excitement of directing the intricate defense network.

The B.M.D. System is a high-tech gauntlet. Each subsystem stops an attack at a different point between Defcon 5, the initial alert, to moments before missiles hit US soil.

The main weapons are a combination of ground-based chemical lasers and orbiting laser reflectors, free-electron lasers, neutral particle beams, electro-magnetic launchers which fire ultra-high velocity "smart bullets," and the nuclear pulsed x-ray laser launcher. The x-ray system, only activated in the ultimate extremity known as Defcon 1, blankets United States air space with enough x-rays to neutralize any enemy missiles. The computer must also guard against anti-satellite mines, which can be removed by a remote controlled robot.

The Control Screen reports the current status of important elements of the B.M.D. System. The data section at the top of the screen monitors such things as the status of the station, the location of the currently transmitting station, the readiness of the station to receive and send data, the progress of any missiles toward the US, the number of ICBMs detected, and the status of visual reconnaissance satellites.

Four buttons, two on each side of the Station CRT on the Control Screen, lead to the rest of the game's screens. "PWR" turns the Station on and off, "Info" displays a menu of available schedules, "Map" calls up the Operation Map menu, and "Help" summarizes commands and instructions.

The player moves the cursor to an onscreen button with the mouse and clicks the left controller button. Other commands, such as recognition codes, are entered through the keyboard.

Defcon 5 starts slowly, but it quickly builds momentum. This is fortunate, because it gives the computerist time to learn the control scheme. Things get hectic during a full-scale attack, so that's no time to forget a command routine.

Defcon 5 strikes a pleasing balance between strategy and action, though quick wits are far more important than quick reflexes. With any luck, this absorbing simulation is as close as the world will ever have to come to seeing this massive defense network do its stuff. Cosmi deserves credit for publishing an entertainment product at the same time fun and instructive.

Cosmi, 431 N. Figueroa St., Wilmington, CA 90744 (phone: 213-835-9687). *–Arnie Katz & Bill Kunkel*

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Reviewed Next Month:

- F-18 Interceptor
- Phantasm
- Questron II

SUPERSTAR ICE HOCKEY
Mindscape
Amiga with 512K
Disk; $49.95

It is almost as much of a pleasure to review *Superstar Ice Hockey* as it is to play it. That is high praise in view of the unalloyed excellence of Ed Ringler's latest action-strategy sports title. The critic's joy at seeing a program which advances the art of sports simulation could only be exceeded by the puck partisan's joy over this thorough and knowledgeable treatment of major league hockey.

The game's flexible structure lets computerists play a single game or a full schedule with equal ease, but the greatest appeal of *Superstar Ice Hockey* is its capacity for extended play.

A letter from the office of the commissioner of the SportTime Hockey League (SHL) opens the Game Manual. It approves the player's application for an expansion franchise in Division 2 of the Western Conference. Using joystick-activated onscreen menus, the player can pick a name for the fledgling franchise, move it to one of the three other divisions, and select uniform colors.

In the full tournament version of *Superstar Ice Hockey,* the gamer, as general manager, has nine seasons to turn the expansion team into a SportTime Cup winner. It won't be easy, because some of the existing 16 clubs have carved out dynasties during the nine years prior to the creation of your team.

The gamer spends "trading points" to send his squad to training camp, recruit a rookie, or trade for an established SHLer. An expansion team starts

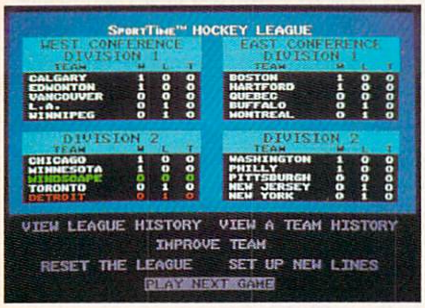
with 250 trading points and earns more based on its place in the final standings at the end of each season. Finishing last earns 1000 trading points, but winning it all yields just 50.

Since a player transaction costs 150 points, the game automatically curbs any propensity toward going overboard in the trading mart. A deal can fill a crucial gap for a team on the brink, but blockbuster deals are appropriately rare.

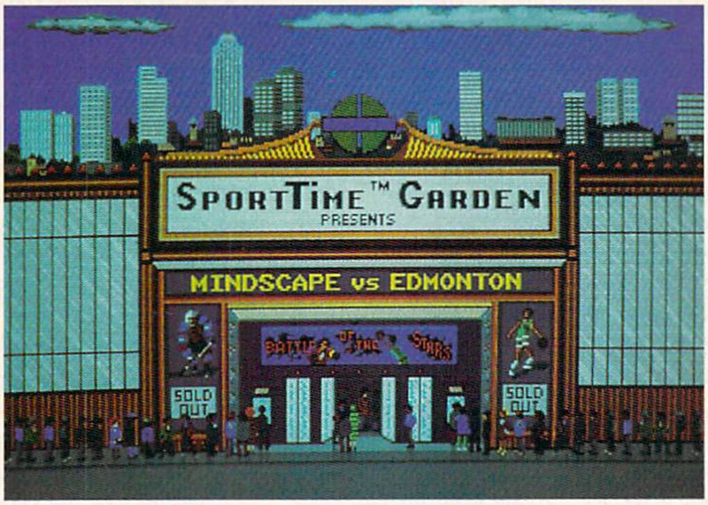
When the focus shifts to the rink, the game allows the player to assume the role of coach. When there's a lull in the action, a screen appears which allows the player to send in new lines and defensive tandems and pick a general style of play for each unit.

Those who don't want to watch from the sidelines can take direct control of their team's center and/or goalie. The joystick plugged into Port 2 is the default control option, but simple menus allow the computerist to change the configuration. This makes it possible for two gamers to play for the same team against a computer-led squad.

Ice fans who don't want to do everything at once can use the option menu to assign one or more functions to the computer. The gamer can elect to just coach, participate only as a player, or put everything but general managing on automatic.



Superstar Ice Hockey *lets the gamer experience the sport from the ice to the GM's office. You can take the nine years allotted to win the Cup, or simply play games.*





The Main Menu screen shows the current standings for all four divisions in the SHL. It also gives access to information screens and utilities. The player can look up the cumulative won-lost record on any team or the whole league, change the composition of on-ice lines, reset the league to its original starting point, perform team improvement functions, or proceed to play the team's next game.

Besides team colors and order entry mode, the Game Set-Up Screen also customizes the number of players on a side and the length of each skating period. The computerist can even choose to dispense with the offsides rule or make the following game an exhibition.

Ed Ringler continues to design some of the most outstanding action sports simulations on the market. *Superstar Ice Hockey* is his finest creation yet.

Mindscape, 3444 Dundee Rd., Northbrook, IL 60060 (phone: 312-480-7667). *—Arnie Katz*

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BARD'S TALE II
Electronic Arts
Amiga with 512K
Disk; $59.95

The little town of Skara Brae needed saving in Michael Cranford and Brian Fargo's *Bard's Tale,* the all-time classic fantasy roleplaying game. In *Bard's Tale II: The Destiny Knight,* ultimate evil threatens the entire Realm. Saradon the Archmage calls on the player, who supposedly defeated Mangar in the earlier game, to confront this new, even greater threat.

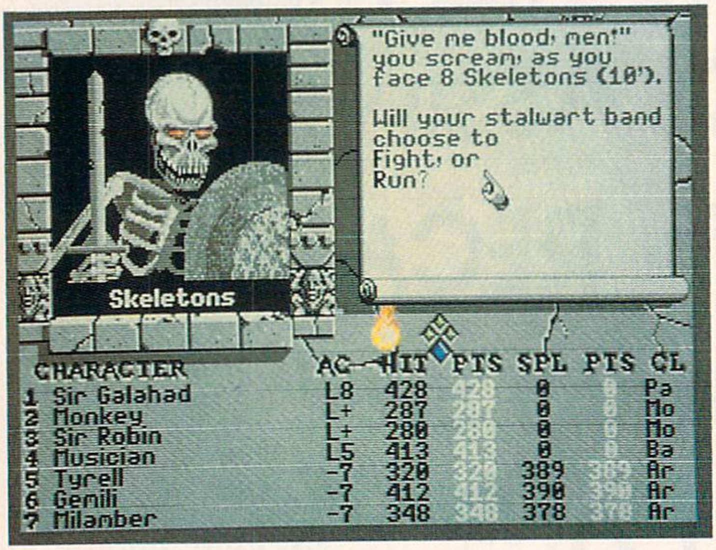
An invasion party from neighboring Lestradae, led by the evil Archmage Logoth Zanta, have invaded the Realm's capital city of Tangramayne. Even worse, they have broken the fabulous Destiny Wand, which previously protected the Realm with its power, and hidden the pieces in seven different locations. Logoth Zanta has ringed each segment with a web of brain-testing traps.

In game terms, the player must retrieve the seven sections of the Destiny Wand, forge them into a sceptre, and defeat the villainous archmage. Achieving these objectives restores prosper-

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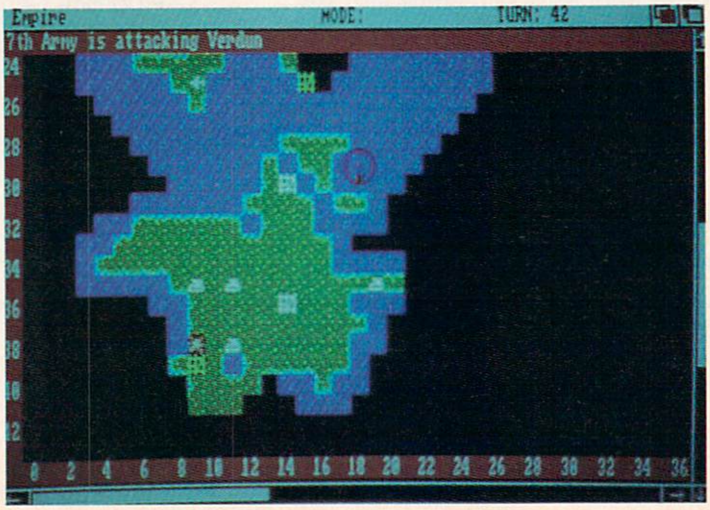
ity to the Realm and earns a notable triumph for the player.

As in most computer games inspired in some degree by "Dungeons and Dragons," the player creates characters and forms them into six-member parties. Each character class has unique powers, so most adventuring groups combine the talents of several specialists. For example, Rogues excel at picking locks and hiding in shadows, Bards sing magical songs, and Monks are martial arts masters who are deadly in hand-to-hand combat.



Combat is the heart of **Bard's Tale II.** *During a fight, the player enters an order to each member with single keystroke commands. The program then reports the outcome.*





Military skill is not the only requirement for victory in **Empire.** *The effectiveness of even the most brilliant commander is limited by the forces he controls.*

Spellcasting plays a major role in *Bard's Tale II,* as it did in its predecessor. There are five types in the new game, including the newly invented Archmage classification. Conjurers create objects like fireballs out of thin air and heal wounds, Magicians can give unexpected powers to ordinary items, Sorcerers are masters of illusion, Wizards summon and control supernatural beings, and the Archmage is a master of at least three of the foregoing disciplines.

Experience gained during travels through cities, dungeons, and the treacherous wilderness of the Realm enables characters to rise in level and gain greater mastery over their specialty. For example, the Archmage can temporarily halt a hostile party with a first-level spell, but can smash a whole group of attackers with one casting of the seventh-level Mangar's Mallet.

As awesome as these talents may seem to the uninitiated, the player needs every bit of this might to keep fledgling characters alive during the first few missions. The manual advises that characters below 14th level do not have a long life expectancy in the game.

There are several ways to obtain the needed high-level party. The easiest is to transfer it from the original *Bard's Tale* using the utility included on the game disk. Those without *Bard's Tale* experience should stick close to the dungeon beneath the Adventurers Guild. This labyrinth is geared to first-level characters.

Once the computerist develops a strong group, he can explore six cities, 25 dungeon levels, and a huge wilderness. More than 100 animated monsters provide plenty of opposition.

Combat is the heart of the game. During a fight, the player enters an order to each member with single-keystroke commands. The program then reports the outcome of that round of the engagement. When a character or monster suffers more damage than he can absorb, he dies.

Bard's Tale II is a completely wor-

thy successor to the 1986 award-winner. It is at least as good as the first title in the series, except where it is even better. And what fantasy adventure fan could ask for anything more?

Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404 (phone: 415-571-7171). *–Arnie Katz & Joyce Worley*

Circle #112 on Reader Service Card

EMPIRE
Interstel
Amiga with 512K
Disk; $49.95

Lovers of complex, demanding strategy games need look no further than *Empire.* This authorized revision of Walter Bright's 1977 "Wargame of the Century" should satisfy anyone's craving for detailed and challenging games.

Version 2.03 of this strategic-level military simulation is coauthored by Walter Bright and Mark Baldwin. The computerist commands land, sea, and air units across the surface of an entire planet against up to two opponents.

The program can administer two completely independent computer-controlled rivals. They are as likely to combine to defeat the human player as to square off against each other in a three-cornered fight.

The first few pages of the 70-page rulebook attempt to connect *Empire* to the "Star Fleet" universe with commendable cleverness, if not complete success. It is unlikely that a simulation based on World War II-era weaponry can ever fit comfortably into a landscape of star-spanning Armadas, teleportation beams, and phasers.

Trevor Forensen's *Star Fleet I* and *Star Fleet II* (both Interstel) concern a war between the United Galactic Alliance (U.G.A.) and the Krellan Empire. Both emphasize battle action in outer space more than on the surface of the planets which are the ultimate prizes of the conflict.

The rulebook outlines a new Krellan strategy for conquering the greatest number of U.G.A. worlds with the smallest expenditure of resources and manpower. In "Operation Big Brother," the Krellans land strategy and production teams at the largest city on the target planet. The teams establish a local general as a puppet ruler and provide him technical assistance. With this edge, the tame general can expand from his base until he conquers the whole planet. The unified and subjugated world then becomes a docile cog in the Krellan Empire.

To disrupt this insidious procedure, the U.G.A. has embraced the doctrine of counter-insurgency. The Alliance sends advisors to the beleaguered planet, where they rally opposition in minor cities. When these dissidents grow powerful enough, they overcome the Krellan-backed regime and establish a democratic planetary government.

The background story's logical flaws, though numerous, should be ignored. If ever a computer game needed no such window dressing, it is *Empire.*

Military skill is not the only requirement for victory in *Empire.* The effectiveness of even the most brilliant field commander is limited by the size of the force he controls. A carefully constructed production plan which delivers the right mix of units is as important as a well-executed attack.

Players direct eight kinds of forces: armies, fighter planes, troop transports, submarines, destroyers, cruisers, aircraft carriers, and battleships. Special rules provide for naval bombardments, patrols, sentries, hidden movement, and sea-based air power.

The program rates each unit for offense, defense, and movement speed. The player explores the planet and captures cities, which are the sources of new weapons production. There is no diplomacy or any similar distraction; *Empire* is war to the finish with no quarter given.

And when one war is over, there are other worlds in need of help against the Krellans. *Empire* includes several additional planets on the game disk, as well as a system for generating up to one million battlefields.

An impressive array of onscreen maps and charts help the player monitor every aspect of play. The graphics are good, and plentiful, by wargaming standards, though some of the color combinations make copy hard to read.

Players employ either keystroke order entry or a system of pull-down menus to control military and industrial activity. The manual exhaustively explains the control system, and Interstel also includes a four-page command reference card in the package.

There are so many options and strategic alternatives to consider that novices, especially those who don't often play wargames, might want to try a few practice turns and view Interstel's demonstration disk.

Empire is a long game. The first hundred turns are just a warm-up during which players explore the surrounding territory and get production underway. The fact that it takes 60 turns to crank out a combatant's first battleship accurately reflects the game's ability to gobble up hours. The "save" and "load" features are necessities, not frills, for this game.

Empire is not for the casual gamer or joystick jock. For those who relish total immersion in a stimulating strategic environment, however, this fascinating wargame is a perfect choice.

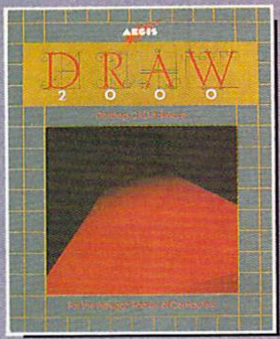
Interstel, P.O. Box 57825, Webster, TX 77598 (phone: 713-486-4163).

–Arnie Katz

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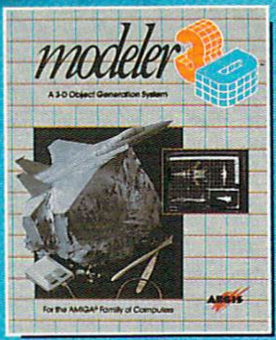
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gaming universe free of power-hungry dictators. If all the villains from this year's games got together for a convention, it would take an electronic Madison Square Garden to hold all those militant madmen.

The latest compu-soldier to enlist in the titantic struggle against international evil is a moustachio'd freedom fighter named Joe Blade.

Armed with his trusty machine gun, Joe must penetrate the heavily defended fortress of Crax Bloodfinger and rescue six important world leaders. While aiding the half-dozen dignitaries, Joe Blade must also find six booby-trapped explosive devices and reset them to blow Bloodfinger's hideout off the face of the Earth.

The joystick moves Joe Blade, a stocky fellow in green fatigues, left and right on the horizontally scrolling playfields. Blade also jumps when the player pushes the stick forward and ducks when the player pulls it back. To go through a door or a hole in a wall, the computerist positions the character in front of the opening and pulls the joystick into the 6 o'clock position.

As in many other games of this general type, Joe must constantly search for important items while he attempts to carry out his mission of mercy. His gun needs a constant supply of ammunition, and Joe himself must find caches of food and drink to keep his energy level, measured by a meter below the active display, high enough to remain functional.

The guards won't hesitate to attack Joe Blade unless he finds an enemy uniform. If he does, Bloodfinger's livery automatically replaces Blade's distinctive green garb.

The explosive devices are actually timed puzzles. When the player stumbles on one of these huge devices, a special screen replaces the normal playfields. It shows a row of five letters, A-E, in scrambled order.

The only way to defuse the booby trap is to place the letters in their proper alphabetical order within 20 seconds. The computerist lights pairs of squares with the joystick. The button switches the positions of the letters in the current lit squares.

The graphic design fosters the illusion of visual depth where none exists. All onscreen movement is left and right. Joe only goes in another direction to get through a door. The careful placement of exits affords Joe Blade easy access from screen to screen and masks this limitation.

It may be hidden, but it *is* present. The main defect of *Joe Blade* is that it gives the player very few choices. Joe Blade can't do much except walk back and forth and blast everything in his way. The explosive traps add excitement and mental stimulation, but additional complications would have improved the action game.

Joe Blade is an exceptionally well programmed product. Its animated illustrations and jaunty soundtrack give it an edge over numerous other "storm-the-fortress" epics.

DigiTek, Inc., 10415 N. Florida Ave., Suite 410, Tampa, FL 33612 (phone: 813-933-8023).

–Arnie Katz & Joyce Worley

Circle #114 on Reader Service Card

← Circle #136 on Reader Service Card

Circle #109 on Reader Service Card

HARD DRIVING ON YOUR AMIGA

Move up to Mass Storage with Two New SCSI Controllers and Backup Software

Text and Photos by Morton Kevelson

There are two things the Amiga can never have enough of: memory and disk storage. Depending on your budget and needs, you will probably assign different priorities to each of these items. Disk drives can be floppy or hard and the harder they are, the more hard cash you need to start with. In spite of an initially high installation cost, a hard drive still comes in as the lowest cost per kilobyte of online storage. Some users feel that a second floppy disk drive should be the first peripheral. Other users find that a hard drive eliminates the need for the second floppy drive entirely. If you have an Amiga 2000, you can choose all of the above and still have room for more.

Hard drives also serve to illustrate one of the less obvious advantages of the Amiga 2000—that is, peripherals for the Amiga 2000 cost less than similar devices for the Amiga 1000 or the Amiga 500. The reason for the lower cost is that the manufacturer does not need to supply a power supply, an interface card, and a shielded enclosure with his device. In fact, nearly all the expansion products being made today are designed for the Amiga 2000 with optional expansion boxes for use with the Amiga 1000 or the Amiga 500. For peripherals which cost less than $1000, the expansion box can be as much as 25% of the total cost.

The Amiga 2000 has also encouraged more peripheral makers to enter the market. The availability of the Amiga 2000's expansion chassis, which can accommodate industry standard devices, makes it easy for a manufacturer to design a new product. Hard drives in particular reflect this new flexibility. Unlike the ones made for the Amiga 1000, the hard drive interfaces for the Amiga 2000 have built-in flexibility. Their driving software has been designed to accommodate a wide variety of hard drives from different manufacturers.

With this report we begin our coverage of hard drives for the Amiga 2000. We started this project by investigating a low cost SCSI interface card, the OverDrive from Pacific Peripherals. As we were going to press we found a 20 megabyte SupraDrive on our doorstep, and with some mildly heroic efforts we were able to include it as well. The increased storage capacity of the hard drive places greater demands on data security and the importance of maintaining proper backups. The accompanying review of *Quarterback* should provide some needed insight in this regard.

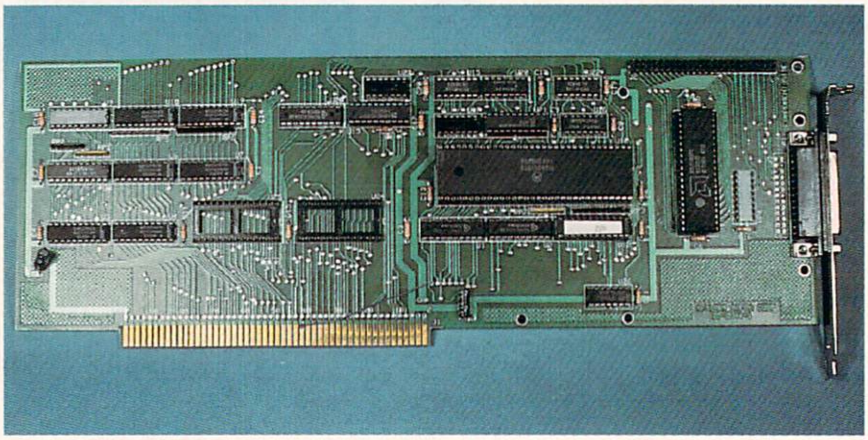
Although both of the interfaces reviewed are designed for the Amiga 2000, they may be used on the A500 or 1000 with a suitable adaptor or expansion chassis. Both manufacturers offer adaptors to allow their products to run on either machine; or you can use a third party expansion chassis which will accommodate Amiga 2000 style cards.

SUPRADRIVE
Supra Corporation
Amiga 2000
Price: $799 (20 meg)

Supra Corporation has been in the Amiga market since its introduction. Their SupraDrive for the Amiga 1000 was one of the first hard drives on the market. Supra is now putting their experience to good use by expanding into the Amiga 2000 peripheral market.



Flexibility is the word for the SupraDrive. You can buy their product just as an Interface Kit without the hard drive or as a complete hard disk system. The Supra interface card is a DMA SCSI controller based on the



Above: the SupraDrive interface card. The empty sockets will be used for hard drive autoboot ROMs under Workbench 1.3 or later releases. Left: the SupraFormat working screen shows four partitions on this 20 meg hard drive.

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dual channel Motorola 68440 chip. It is built on a standard Amiga 2000 card with both 50 pin and 25 pin SCSI ports. The 50 pin port is located at the top rear for use with an internally mounted drive. The 25 pin port projects out the back for use with an external, Macintosh style SCSI drive.

To provide for future support of booting from the hard drive under AmigaDOS 1.3 or higher, the interface card was equipped with a pair of 28 pin sockets for ROM chip installation. Note that to achieve hard drive booting you will also have to replace a ROM inside the computer. The interface card we received was apparently not the final version, as we found some last minute changes in the form of jumper wires on both the front and back of the board. The circuit board itself is a two layer design with gold plated edge contacts.

We received our unit as a 20 megabyte system complete with a Miniscribe 8425 3½" hard drive. When you buy the complete system you specify its capacity; Supra then chooses the hard drive. If the hard drive does not have an integrated SCSI controller, the system will be supplied with a suitable SCSI to ST-506 adapter, most likely one of the Omti devices. The controller piggybacks at the rear of the Supra interface card. Our system also came with enough mounting hardware to allow us to install the hard drive into either the 5¼" or 3½" drive bays in the Amiga 2000.

As with any other Amiga 2000 internal peripheral, installation requires that you open the computer and get into the hardware. The degree of involvement depends on whether you are using the 5¼" or 3½" drive bay. Supra provides a photographically illustrated manual which clearly shows what is involved. The only problem we had was identifying the number 1 pin on the 50 pin SCSI connector. Apparently, the positioning of the J2 designation for this connector was also meant to indicate the location of pin number 1. The hard drive came with a stick-on Supra label which clearly marked the position of pin number 1.

The hard drive itself was slightly modified by Supra to allow for the connection of the Amiga 2000's hard drive LED wires. These wires hang loose inside the computer as supplied by Commodore. The ability to hook up the LED wires lets you install the hard drive inside the computer's case without regard to its external visibility.

Set Up and Software

The Supra Drives are preformatted at the factory with a copy of the Workbench disk already installed. The SupraDrive boot disk automatically starts the system and reassigns all the appropriate devices to the hard drive. The 20 megabyte drive which was supplied with our system was set up with four partitions of 2, 5.1, 5.1, and 7.9 megabytes. The use of partitions speeds up the operation of the drive and encourages better file organization.

If you are supplying your own hard drive, or if you wish to rearrange the structure of the one you have, you will use the SupraFormat utility which is found in the System drawer of the SupraDrive boot disk. SupraFormat is an easy to use mouse- and keyboard-driven utility which lets you adjust the number and size of the hard drive's partitions. It also includes gadgets which let you format, map, or zero the hard drive.

The format function is the standard AmigaDOS command. The map function marks all defective sectors, making them inaccessible. The zero function effectively erases or reformats the hard drive by deleting all of the disk's directory information. Executing the zero function is a lot faster than reformatting or erasing all the original files. The Format command which will be supplied with AmigaDOS 1.3 will include the equivalent of a zero option. The format function also gives you the option of setting up a partition to accommodate the new AmigaDOS fast file system. SupraFormat does not seem to use the Amiga Mount command and its associated Mountlist file. Instead, the hard drive configuration data seems to be stored in the SupraMount command file itself.

Also supplied on the SupraDrive utility disk is a copy of *CLImate* from Progressive Peripherals. We presented a detailed review of *CLImate* in the June 1987 issue of *Ahoy! CLImate* is one of the easiest to use mouse-operated file management utilities we have seen for the Amiga. Our only problem with *CLImate* was its reliance on its .fastdir files for disk contents when the disk was write protected. This has been fixed by the inclusion of a gadget which lets you toggle the use of the .fastdir files. However, *CLImate* still insists on creating the .fastdir files if the disk is write enabled. We would like to see the option for placing the .fastdir files in RAM rather than on the disk.

Conclusion

As can be seen from the accompanying chart, the SupraDrive exhibited a slight advantage in operating speed. The supplied software was well thought out and easy to use. The SupraDrive system is well worth considering for your Amiga hard drive needs.

Supra Corporation, 1133 Commercial Way, Albany, OR 97321 (phone: 503-967-9081).

Circle #121 on Reader Service Card

OVERDRIVE
Pacific Peripherals
Amiga 2000
Price: $249

Inasmuch as a hard drive is an expensive peripheral, it should be bought only after careful consideration. Oddly enough, this is just what we didn't do. It was at the Santa Clara Commodore convention in May that we spied Lee Adams promoting his OverDrive SCSI host adaptor for the Amiga 2000. Perhaps it was a desire not to return empty handed after traveling more than 3000 miles, or perhaps we just couldn't resist the reviewer's discount that Mr. Adams offered us. In any event, when we left the show we found ourselves the somewhat apprehensive owner of an OverDrive controller card sans hard drive.

Upon our return to New York we immediately set out upon a search for a suitable SCSI hard drive to hook up to our OverDrive. After a while we got

the distinct impression that SCSI drives could be a scarce commodity at times. Once again we invoked our privilege of the press, and called upon our friends at C Ltd. About one month later we had in our possession a 47 megabyte, Seagate ST-157N hard disk drive along with a C Ltd SCSI Controller card. Thus, nearly two months after we got back from the west coast, we ended up with twice as much hard drive as we started out to get, with twice as many controller cards as we needed, and with twice as much money spent as we had expected. Some things never change.

Since C Ltd formats and stuffs every hard drive they sell with 7 or 8 megabytes of public domain, shareware, and demo programs, we decided to start out tests with the C Ltd controller. After some sporadic operation, during which time we did manage to print out about 70 pages of C Ltd's SCSI manual, the C Ltd controller ceased to function. This was something of a disappointment, as the C Ltd SCSI system looks like it has some really nice features which we would have liked to try out.

Fortunately, we still had the OverDrive which we proceeded to install and which did perform flawlessly. As of now we will tell you about OverDrive. Hopefully in the next issue we will be able to discuss the C Ltd SCSI controller with some greater authority.

The OverDrive is a Direct Memory Access (DMA) SCSI host adaptor for the Amiga 2000. For the Amiga 500, Pacific Peripherals offers their SubSystem 500 ($249), a two slot expansion chassis with separate power supply. For the Amiga 1000, they offer the SubSystem 1000 ($299), a three slot expansion chassis with separate power supply. Both of these products accept Amiga 2000 style Zorro cards. The SubSystem 500 has space for a 3½" floppy drive, while the SubSystem 1000 can accept a 3½" hard drive. We have not tested either of these products.

The OverDrive is built around a Motorola 68440 two channel DMA controller. The OverDrive software only uses one of these channels. If you have

The Performance Test

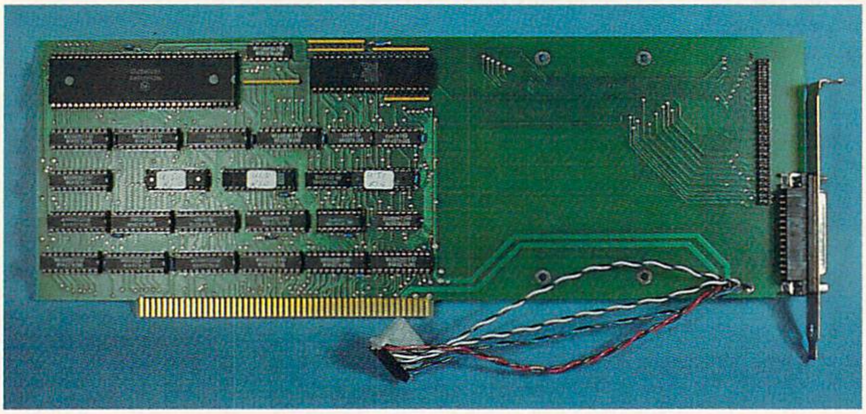
The speed at which the disk drives transfer data is important in a disk-based operating system. In this regard AmigaDOS' floppy disk activity has not earned a reputation for high speed. The use of a hard drive does improve matters substantially. We ran several tests to measure the relative performance of the OverDrive as compared to other systems. The first series of tests consisted of copying the "C" directory from both hard and soft disks to RAM: and back again. In our case the "C" directory contained 51 files and occupied 417 disk blocks. The results are summarized in the following table: each device.

Direct comparison of these test results with similar data published for other drives should be done with caution. Disk drive speed benchmarks are affected by a variety of system parameters including the hard drive in use (in this case a Seagate ST-157N with the OverDrive and a Miniscribe 8425 with the SupraDrive), buffer size, disk contents, the time of day, and the state of mind of the system operator. In general, speed tests should be viewed as a measure of the relative performance of similar systems. For the above tests the OverDrive had about 7 megabytes of data before we started. The SupraDrive was run from

FILE COPY PERFORMANCE (in seconds)	Over-Drive	Supra-Drive	DF0/1:
Copy DH0:C To RAM: All	17	18	–
Copy RAM: To DH0:Temp All	25	24	–
Copy DF0:C To RAM: All	–	–	51
Copy RAM: To DF1:Temp All	–	–	173
Delete DH0:Temp/#? All	7	9	–
Delete DF1:Temp/#? All	–	–	40

All tests were done with the default number of disk buffers. The test of DH0: was done with about 7 megabytes of data on the disk. The test of DF1: was with a freshly formatted disk. Perhaps the most significant result of these tests is contained in the first line of the table, which shows the total time required for the complete series of tests on an empty partition DH2: The source floppy (DF0:) was a typical Workbench disk and the destination floppy (DF1:) was empty. The default number of disk buffers was used. We also ran the widely used disk performance test by Rick Spanbauer found on Fred Fish disk number 48. The results of our tests were as follows:

DISK PERFORMANCE	Over-Drive	Supra-Drive	DF1:	RAM:
Total Test Time in Seconds	471	330	1300	182
File Creations per Second	5	7	0	5
File Deletions per Second	14	15	1	10
Directory Scan (Entries per Second)	52	43	36	5
Seek+Read per Second	63	65	17	49
Read Speed Bytes per Second				
512 Byte Buffer	23616	30481	11599	187245
4096 Byte Buffer	23831	36921	12423	655360
8192 Byte Buffer	23831	37449	12365	655360
32768 Byte Buffer	23831	–	12365	873813
Write Speed Bytes per Second				
512 Byte Buffer	12725	17832	4993	131072
4096 Byte Buffer	12787	21140	5110	238312
8192 Byte Buffer	12725	20971	5150	262144
32768 Byte Buffer	12663	–	5150	291271



Inside the **OverDrive.** *The large chip at the top left is the two channel DMA controller. The loose wires terminate in a power connector for use with an onboard mounted 3½" drive. SCSI connectors are to the right.*

the time and the talent, you can probably come up with a use for the second channel. The OverDrive is installed in one of the Amiga 2000s 100 pin expansion slots. Connection to a SCSI device is via a SCSI standard 50 pin connector which is located on the side of the board inside the computer. A 25 pin Macintosh style SCSI connector is positioned at the end of the board so that it is accessible from the back of the computer.

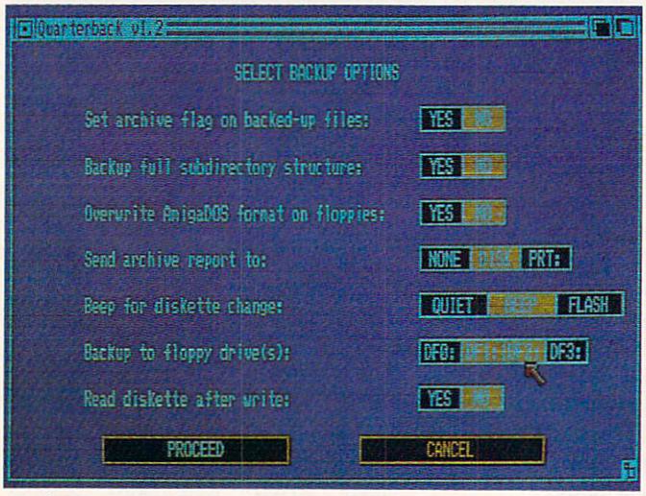
The board itself has four holes toward the rear which can be used to mount a 3½" hard drive. This can effectively turn the OverDrive into a hard card for the Amiga 2000. You can buy the OverDrive with or without a hard drive. If you elect to supply your own drive you will also have to provide your own connecting cable. We installed our hard drive in the Amiga's 5¼" drive bay so that we could watch its little green light flash. While it may not seem like much, that blinking green light lets us know that something is going on when everything else seems to hang up.

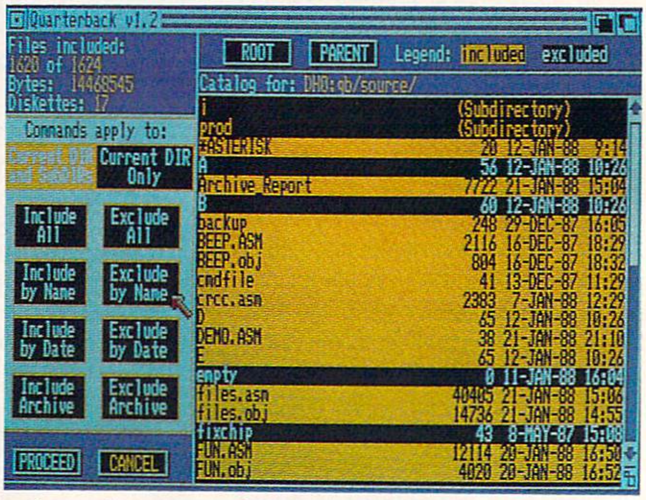
The question on everyone's mind with regard to hard drive controllers is just how they will accommodate booting from the hard drive under AmigaDOS 3.0 when it is finally released. Pacific Peripherals intends to supply a piggyback adaptor board which will install in one of the chip sockets on the OverDrive. The Adaptor board will contain the necessary autoboot code in ROM. Pricing and schedule for the adaptor board were not available at press time.

The OverDrive supports a variety of SCSI hard drives as well as ST-506 drives if used with a 4000 series Adaptec adaptor card. The software, which is supplied with the OverDrive, is designed to simplify the installation process. The OD UTILITIES program automatically queries the disk drive to determine which type it is. If for some reason the drive fails to respond, you can still identify the drive manually. We received our OverDrive software with parameters for 16 different SCSI devices. Since then several more have been added. If your hard drive is not on the list, contact Pacific Peripherals for instructions on how to update the installation file. The next release of the system software will most likely include your drive's parameters as well.

The installation software is menu-driven. Menu selections take you through a low level format of the drive which is followed by a certification which allocates any bad blocks. Another menu selection is used to update the mountlist on the Workbench disk. When you quit the system the OD UTILITIES automatically performs an Amiga format of the hard drive and it is ready for use. The final step is to copy the overdrive.device driver file to the devs directory on your Workbench disk.

OverDrive is supplied with a preliminary manual which as of this writing has not been finalized. Pacific Peri-





Left: **Quarterback's** *Backup Options selection screen. Note that only two out of four floppies may be active at any time. Right:* **Quarterback's** *file and archive selection capability lets you save files and directories.*

pherals may be waiting for Commodore to issue AmigaDOS 1.3 before they commit themselves to a final manual. The documentation was adequate for setting up and installing the OverDrive. The most notable shortcoming was a regrettable lack of examples on how to modify your startup-sequence file transfer control over to the hard drive on booting.

Overall, OverDrive is a competent performer which deserves to be added to the ever-growing list of peripherals for the Amiga 2000 computer.

Pacific Peripherals, 1080 Hiawatha Court, P.O. Box 14575, Fremont, CA 94539 (phone: 415-651-1905).

—Morton Kevelson

Circle #122 on Reader Service Card

QUARTERBACK
Central Coast Software
Amiga with hard disk drive
Price: $69.95

Once you have your hard disk up and running, you may find yourself beset by a new form of anxiety—the specter of hard disk failure. Although hard disk failure does not bear the social stigma associated with some personal inadequacies, it is nonetheless a traumatic experience. In fact we have found that the magnitude of the trauma is generally proportional to the square of the capacity of the hard drive. Now, you may feel that your hard drive is infallible and not likely give up the ghost. Furthermore, you intend to replace it with a new one every two years, whether you need to or not. Before you let yourself sink into the false security of smug self satisfaction, keep in mind that hard drives do not have write protect tabs! Thus, there is nothing to prevent some natural or person-made disaster from trashing all of your files while the functionality of your hard drive remains intact. After all, we do live in the age of the virus.

Chances are that you did not need the above bit of advice to convince you of the wisdom of data backup. However, when you are dealing with 10, 20, 30 megabytes or more, backing up files can be an everlasting tedium or at the very least a time consuming task. The AmigaDOS file COPY command is not the fastest way to transfer data between devices. On top of it all there is the formidable task of keeping track of which files need backing up and where to find them once they are backed up.

You might say that a large portion of your hard drive contains software which was transferred from floppies in the first place. Therefore, you already have an original copy, and possibly a duplicate, from which to restore in the event of disaster. As a result, only your data files really need to be backed up. While this may be true, consider for a moment how much time you have spent installing all that software on your hard drive. Now ask yourself if you really want to go through all that again.

Having firmly established the need for an organized backup when dealing with large amounts of data, we present *Quarterback* as a possible solution to the backup woes. *Quarterback* provides a working environment which makes backing up the contents of your hard drive a virtually foolproof task. It practically takes care of all the bookkeeping which is needed to organize your backups. It can also double as a high performance file management utility when it is not backing up hard drives.

Just how fast is *Quarterback?* According to Central Coast Software, they were able to back up 20 megabytes in under 40 minutes using a C Ltd hard disk. We were not able to confirm this, as we could not get our C Ltd SCSI controller working in time for this review. However, with our Pacific Peripherals OverDrive, which is a DMA SCSI controller, we were able to back up about 7 megabytes, in 1001 files, in about 11 minutes, to eight floppy disks. This works out to well under a minute and a half per floppy, which is faster than the AmigaDOS Diskcopy command. Extrapolating to 20 megabytes, we git a bit over 30 minutes. Not bad at all.

Quarterback is easy to use. All options are selected from a series of screens which prompt you through the proper sequence. When making a backup you have a variety of ways to choose which files are to be copied. Files may be selected manually, by date, or by the status of the AmigaDOS archive bit. AmigaDOS resets the archive bit whenever a file is changed. Since *Quarterback* gives you the option of setting a files archive bit on all of the files which it copies, it can easily identify which files were changed since the last backup.

The manual presents two schemes for backing up your hard drive. The first involves a periodic full backup, say once a month, setting the archive bit of all the files. In between the full backup intervals, perform an incremental backup without setting the archive bits. The advantage of this scheme is that it needs only two sets of backup disks; however, the size of the incremental backup set tends to grow. If a restoration is required you will only have to go through two sets of disks to archive a complete retrieval. Note that you have to go through all of the sets of backup disks in chronological order, until the last full backup, with *Quarterback*.

The second scheme also involves a full backup, with the archive bits set, once a month. The incremental backups also set the archive bits. The difference is that each incremental backup must be done to a new set of disks. The advantage is that the incremental backups take less time than in the first scheme. Of course if a restoration is required, you will have to go through more than two sets of backup disks to complete the job.

Quarterback uses its own disk format for its backup floppies. The *Quarterback* disks can be copied with the AmigaDOS diskcopy command; however, AmigaDOS cannot access any of the files. Incremental backups must be performed to a new set of disks, or to a set of disks which may be overwritten. *Quarterback* cannot add files to an existing set of backup disks. When *Quarterback* performs a backup it stores a complete index of the backed-up files on the first floppy in the backup set. You have the option of sending a copy of the backup report to disk or printer immediately after *Quarterback* completes a backup. You should take advantage of this option, as the backup file index cannot be accessed and printed out at another time. *Quarterback* also gives you the option of sending a restoration report to the printer or disk after a restoration is complete.

We mentioned that *Quarterback* can double as a file management utility. *Quarterback* gives you the option of selecting the device to which it will restore. This choice is of course essential if your hard drive has become a non-drive or is otherwise deceased. *Quarterback* also has a very good catalog display and file selection facility. As a result it is perfectly feasible to extract selected portions of a complete hard drive backup for restoration to floppies, RAM:, or other AmigaDOS file storage devices. However, be certain to pay attention to the total size of the files to be restored, as shown on the *Quarterback* display screen, so as not to exceed the capacity of the restoration device.

When doing a backup, *Quarterback* lets you choose two and only two of the four possible Amiga floppy drives. If you are backing up two floppy drives, *Quarterback* automatically keeps track of the drives' status and prompts you for all disk swaps. If you are reasonably adept at flinging floppies, you should have no trouble at all keeping *Quarterback* properly fed. In this case, *Quarterback* will be able to automatically switch to a fresh disk when it finishes with the current one. The backup display and prompt screen positions the df1: prompt/requestor to the left and the df0: prompt/requestor to the right. This is the opposite of the physical positioning of the disk drives that you are likely to have on the Amiga 2000, which could lead to some confusion during the heat of backup. Of course it is possible to change the hardware disk drive devices on the computer, but having the option in the program would be simpler.

When doing a restore from floppy, *Quarterback* lets you use only one of the four possible disk drives at a time. Central Coast feels that the pressure of a forced restore should not be augmented by the user's need to choose disk drives. We feel that Amiga users are a sturdy lot who can be depended on to react properly under stress. The choice should be left to the end user.

Overall, *Quarterback* looks like a well-designed, dependable product which should do the job when the chips are down. We reviewed version 1.4 of the program, which has remained unchanged for over four months as of this writing. At this time Central Coast Software appears to have squashed all the bugs which tend to show up in a new product. At the present time the company is contemplating revisions based only on feature changes and not problem correction.

Central Coast Software, 268 Bowie Drive, Los Osos, CA 93402 (phone: 805-528-4906). *–Morton Kevelson*

Circle #123 on Reader Service Card

Circle #284 on Reader Service Card →

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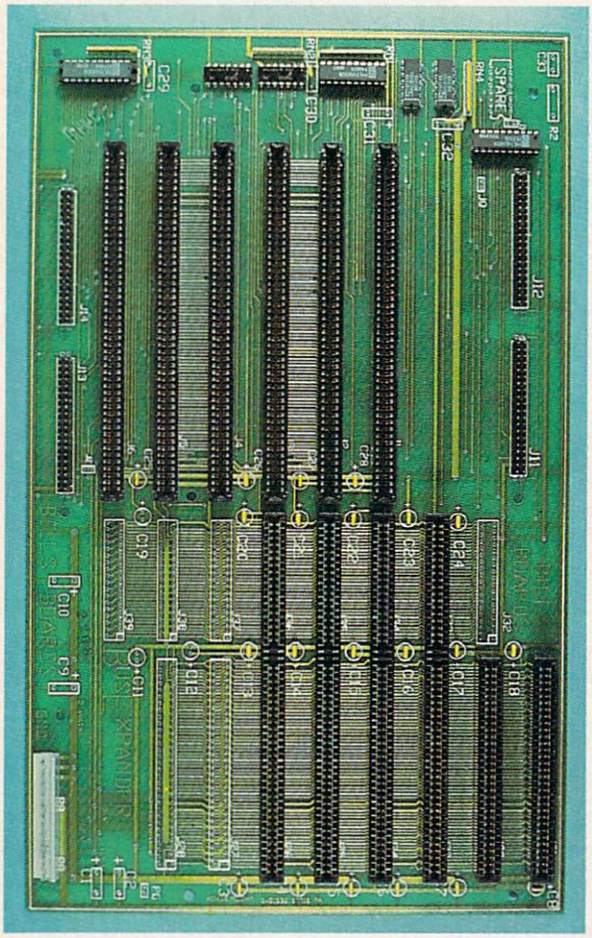


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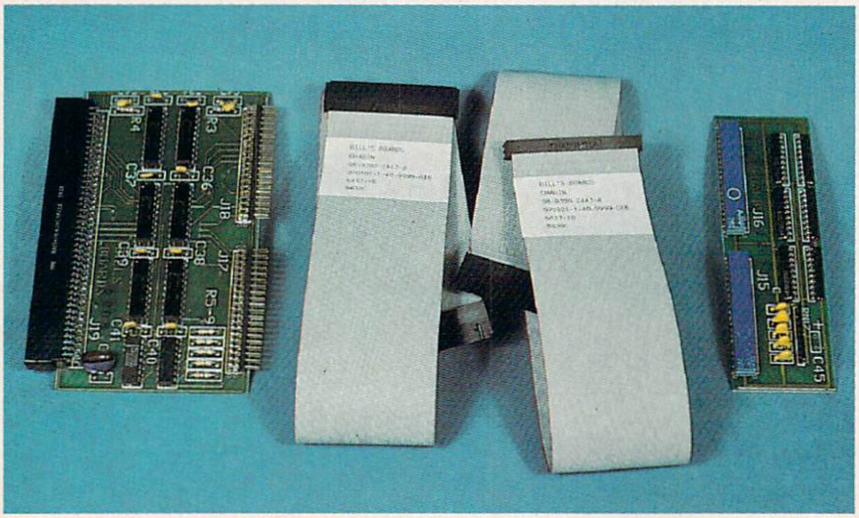
BUSEXPANDER
Comp-U-Save
Amiga 500/1000
Price: $495

So you were the first kid on your block to buy an Amiga 1000 and you found it was fantastic and you soon discovered that to really make it fly you would need more memory and more disk drives and a hard drive and other neat gadgets and you really believed Commodore when they said they would support you all the way and then along came the Amiga 2000 with all that expansion space and everyone seems to be making expansion cards for it and nobody is making the old Amiga 1000 Zorro cards anymore and now you're feeling left out in the cold. Is that what's troubling you, friend?



Left: The BusExpander motherboard in all its glory. At the top we have six IBM XT style connectors with circuit traces for two more. Across the center are four IBM AT extension connectors with traces for four more. Across the bottom are the six 100 pin, Amiga 2000 type connectors. The dual row headers, adjacent to the Amiga slots, are for the terminator board and the connection cables. The power supply connector is at the upper right.

Below: Left to right are driver board, connection cables, and terminator board.



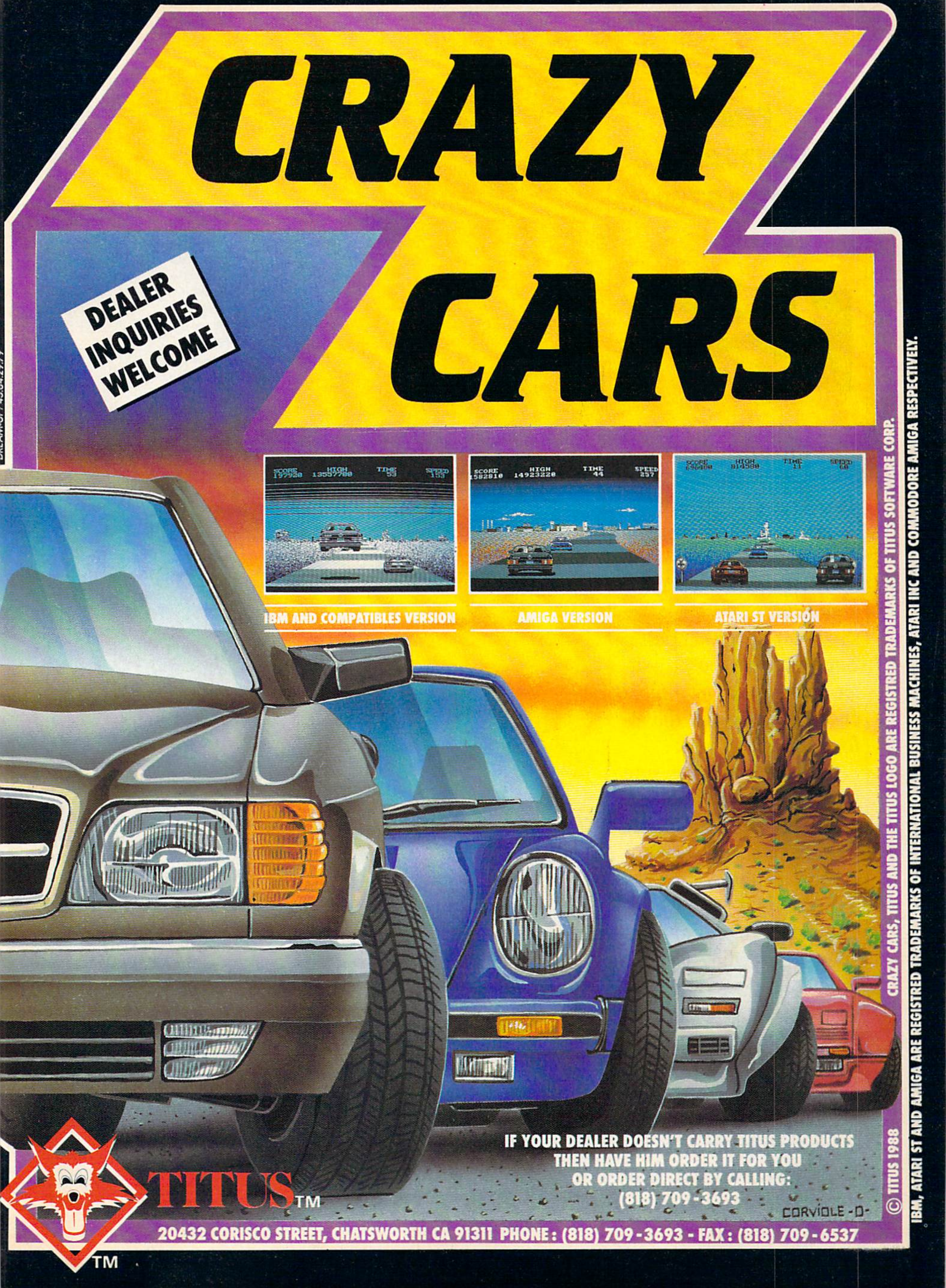
PHOTOS: MORTON KEVELSON

Or maybe you waited and bought an Amiga 500 figuring you would try it out and see what all the shouting was about and now you're hooked and you can't live without it and you need more memory and maybe a hard drive or a video digitizer board and you're wondering if you shouldn't have bought that Amiga 2000 in the first place. Is that what's bothering you, bud?

Well, don't despair now, as help is on the way. If you don't mind hacking some hardware, then the BusExpander, made by Bill's Boards and distributed by Comp-U-Save, may be just what you've been looking for. In a nutshell, the BusExpander is an expansion board with no fewer than six Amiga 2000 style expansion slots and six IBM style expansion slots which is designed to interface with the Amiga 1000 or the Amiga 500. Two of the IBM slots are eight bit XT types, while the rest are 16 bit AT types. The sockets are arranged to give you a total of nine expansion slots.

By comparison the Amiga 2000 only has five Amiga slots and only four IBM slots, arranged to give you a total of seven expansion slots. The total number of usable slot positions is less than the sum of the Amiga and the IBM slots, since three of the Amiga/IBM slots overlap in the BusExpander and two overlap in the Amiga 2000. This overlap is to accommodate the Bridgeboard, which spans one set of the combination Amiga 2000/IBM XT slots. In the process, the Bridgeboard activates the IBM style expansion slots and provides a full-featured IBM XT computer which functions under the Amiga's multitasking operating system.

To complete our comparison with the Amiga 2000 we note that the Bus-


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Expander does not have the 86 pin coprocessor slot or the internal video slot. The Amiga 2000's coprocessor slot lets you soup up performance by installing a full 32 bit 68020 microprocessor. The video slot is for use with video peripherals such as a professional quality Genlock.

The BusExpander is supplied as a semi-kit which leaves much of the installation and assembly for the end user. The BusExpander consists of a nine slot motherboard, a terminator board, a driver board, and a pair of specially constructed flat ribbon cables. The terminator board carries a resistor network which is installed in a pair of sockets on the motherboard. The driver board installs in the 86 pin expansion slot on the Amiga 1000 or the Amiga 500 and buffers all of the signal lines coming from the computer.

To finish up the BusExpander, the end user has to also provide a Baby AT style computer case and a 200 watt IBM style power supply. The power supply powers only the BusExpander and its cards; it does not substitute for the associated computer's original power supply. The typical Baby AT case has accommodations for eight expansion slots, the power supply, and up to three half height 5¼" disk drives. This means that the ninth slot on the motherboard will not have a corresponding opening at the back of the case. We checked the prices of the Baby AT cases and power supply and found it ranged between $100 and $200. If you shop around you may be able to do even better.

To complete the installation you have to cut a hole in the bottom of the case through which to pass the ribbon cables. These 18" cables are teflon insulated and are designed to have uniform signal transmission properties. The power supply is then installed and the motherboard is mounted on insulated posts. For the Amiga 1000 the ribbon cable has to be folded and routed in a specific fashion. The preliminary manual provided an excellent step by step procedure with nearly a dozen detailed drawings to illustrate each step.

The Amiga 1000 installation ends up with the BusExpander sitting to the right of the computer. With a little ingenuity and a willingness to place the AT case front to back, it should be possible to stack the BusExpander on top of the Amiga 1000. Conversely, the AT case can be set upside down and the Amiga should fit on top of it. The latter arrangement may require the interchange of the termination board and the connection cables. Although the manual did not indicate this could be done, a spokesman for Bill's Boards gave the arrangement his blessings.

The Amiga 500 installation ends up with the computer sitting on top of the AT case. This may be a bit awkward, as it will elevate the keyboard about six inches above the table. It should be possible to stand the AT case on its side alongside the Amiga 500, resulting in an expansion tower to the left with the keyboard on the table where it belongs.

We tried out the BusExpander on both the Amiga 1000 and an Amiga 500 using the expansion cards we had on hand. The electrical slot order in the BusExpander is opposite the arrangement used in the Amiga 2000. In the BusExpander, the first Amiga 2000 slot is to the left. This is important, as some peripherals, such as the Commodore A2090 DMA controller, should be installed in the first Amiga 2000 slot.

With the Amiga 1000 we installed a Bridgeboard in slot number 1 followed by a Pacific Peripherals OverDrive DMA hard disk controller and a Commodore 2 megabyte RAM card. We tried moving the OverDrive card to the higher numbered slots but were unable to get it to work there. This arrangement left us with three usable IBM expansion slots, one of the AT style and two of the XT style. According to Bill's Boards, we could have placed the Bridgeboard in any overlapping slot and we still would have been able to install Amiga 2000 boards on either side of it. This could have let us put the OverDrive in slot 1 and the Bridgeboard in slot 3, leaving up to four slots open for IBM peripherals and up to four slots for additional Amiga 2000 peripherals.

We then substituted a Supra DMA hard disk controller card for the OverDrive card and found that it would work in any of the expansion slots. As a final test we installed a C Ltd aMega 1 megabyte RAM expander with pass through between the Amiga 1000 and the BusExpander, but we were unable to get this arrangement to function properly.

With the Amiga 500 everything functioned properly when we used the same initial setup consisting of Bridgeboard, OverDrive, and 2 megabyte card. We were unable to get the Supra DMA hard disk controller to work in the BusExpander with the Amiga 500.

The BusExpander appeared well-made. The motherboard withstood some pretty rough handling during the installation and testing as we tried the various cards in different slots. When powering up the system, the BusExpander should be turned on first, followed by the computer. Since reversing


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these steps could damage the equipment, we would like to see some form of interlock to insure the proper power up sequence. We also noted that the AT case had no fewer than four LED indicating lights on the front panel. It would have been nice if the motherboard had some place to connect at least one of these to indicate that it had been turned on.

The BusExpander is obviously not the solution for everyone. However, it does give you more slots per dollar than any other expansion box we have seen. If you can handle the installation, the BusExpander may be just what you have been looking for. One final word of advice to users of any Amiga expansion card (this includes the Amiga 2000): always look for a try before you buy policy. As more manufacturers get into the Amiga peripheral market, the likelihood is that compatibility problems will increase.

Comp-U-Save, 414 Maple Ave., Westbury, NY 11590 (phone: 516-997-6707, 800-356-9997).

—Morton Kevelson

Circle #118 on Reader Service Card

ZING!SPELL

Meridian Software, Inc.
Amiga with 512K
Disk; $79.95

Long, long ago, during the time when VCRs were becoming valid and dubious electronic accessories for them—many with LEDs and LCDs—were proliferating, I coined the term UED: Useless Electronic Device. Later I became involved with computers, spending my first year typing in programs from various magazines. This led me to the creation of the term UCR—Useless Computer Routine.

What does all this have to do with *Zing!Spell?* Well you might ask.

Purportedly, *Zing!Spell* is an online spelling checker that will work with virtually any word processor, even the original version of *Textcraft,* a program notorious for its inability to multitask. So far as I can tell, *Textcraft* remains notorious and *Zing!Spell* never shows up to challenge it.

Allegedly, *Zing!Spell* offers spelling help. The kind of help offered is at best spurious and at worst infuriating. Rather than check strings of the first three or four letters, as do most other programs of its type, *Zing!Spell* checks the first consonant but treats the others as wild cards. Vowels are checked so that if you misspell a word like Peterson it will check for words similar to "Pe*e**o*": instead of getting a list of suggestions such as pet, petrified, and so on, you're more likely to see words such as peritonitis, pediatrist, or almost anything else.

The manual lays claim to hot keys for the program, whereby one keystroke can invoke one of the powerful features of *Zing!Spell*. This is rather nice, but only if you like your powerful features randomized. F1 is said to activate/deactivate the main window; my conclusion is that it only activates whatever is already active (in other words, no change). F2 is supposed to move the main window to back or front of screen; in my experience it calls up the disk directory of the word processor. F3 is said to suspend or resume *Zing!Spell;* my feeling is that *Zing!Spell* is always suspended, so why bother? Other hot keys hold other not-so-hot surprises.

These gaps between what is real and what is alleged are mere quibbles compared to the one factor that earns *Zing!Spell* the UCR designation: I can't make it work.

Oh, it puts on a good show. Click on the icon and it goes through all the business of loading dictionaries and indexes and such, and presumably putting them into a RAMdisk. And a small window opens, showing a one-line message as to the next step to be taken by clicking on one of several buttons. Click on the suggested one—'OP'—and another window opens and you are told to click on the 'AC' button in that window and then further directed to open your word processor.

That's it. Your word processor opens, you can type from now till doomsday and make any spelling error you want, and *Zing!Spell* is never heard from again.

Sure, you can swap screens, sending the word processor into temporary limbo and bringing up Workbench with the *Zing!Spell* window in place. But until you click on it, the *Zing!Spell* window is inactive, and having been inactive it hasn't done anything while you were away—rather like a brother-in-law taking a nap.

Now, I'll admit that some of the failings I attribute to *Zing!Spell* may be my own failings. Perhaps I'm not using it correctly, and if that is the case I'll blame it on the documentation—the worst I've ever seen. Not only does it miss several points I would consider crucial—such as how to load the word processor and what word processors may be used—but it is such a poor printing that prolonged reading may be hazardous to your health.

The document was printed on a dot-matrix printer with screen dumps to provide the illustrations, was apparently subjected to a poor photocopy machine and then printed and stuffed into a package for which you paid $79.95.

Even hackers deserve better.

To be fair, there is one part of *Zing!Spell* that does work, else I'd not have been able to see how the suggested spelling feature works. Whereas *Zing!Spell* is meant to be an online, real-time checker that will sound an alarm at the end of a word, sentence, paragraph, or during a carriage return, ZSBATCH—on the same disk—will check an entire manuscript for errors.

Boot up ZSBATCH and open a file

previously created with your word processor, and it can be checked in its entirety. At a misspelling, the program will pause and offer you a chance to correct the spelling, ignore the occurrence, ignore all occurrences, add to dictionary, or exchange.

Exchange is a rather nice feature, and it is akin to what most of us call search and replace. Type "par" during the writing of your manuscript and later change all occurrences to "paragraph"—or to any other string of up to 120 characters.

ZSBATCH will also, if you like, trap common errors of punctuation such as questioning whether a space should occur following a period, whether a particular word should be capitalized, and so on.

ZSBATCH is the part of the program that will work not with *Textcraft* but with *Textcraft* files. It will also work with files made with *ProWrite*, and is said to work with files from *Scribble!* Drawbacks are that you'll never see more than four or five lines of your document with ZSBATCH and that the "suggested spelling" feature works as described above.

Still, if you are locked into using *Textcraft, ProWrite* or *Scribble! 1.0,* ZSBATCH might be a worthwhile investment—but only if you can buy half of *Zing!Spell* for half price. Meridian also offers a free thesaurus add-on in return for registering your purchase. If you go for this, insist that they also throw in some coherent documentation.

Meridian Software, Inc., 9361 W. Brittany Ave., Littleton, CO 80123.

—Ervin Bobo

Circle #129 on Reader Service Card

AC/BASIC v. 1.3
Absoft
Amiga with 512K
Disk; $195

The BASIC programming language is quite simple and easy to learn, but has consistently been looked down upon by programming pros for two reasons: it is not very powerful, and programs written in BASIC are very slow. The Amiga computer using Microsoft's Amiga BASIC ameliorates the problems to a great extent. First, the Amiga itself is a relatively fast computer, and second, Amiga BASIC is an enhanced version of BASIC which utilizes almost all of the Amiga's graphics and sound capabilities. It even permits access to the lower level operating system routines. But compared to programming languages like C and assembly, BASIC is still quite slow and unsuitable for applications which require speed (such as graphic animations and heavy duty calculations). Why? Because BASIC is an interpretive language. This means that every time a BASIC program is run, the computer checks each program line for errors and then translates it to machine language (instructions the computer can understand) before the line is actually executed. And this takes a lot of time, particularly in long FOR-NEXT loops.

The *AC/BASIC* compiler from Absoft is an easy to use program that essentially does all the checking and translating ahead of time. It converts your BASIC program into a stand-alone machine language module, and, depending on the application, increases the execution time up to 5000%. It also includes some programming features which are missing from Amiga BASIC.

Now for the good news and the bad news. The good news is that the compiler is 100% compatible with Amiga BASIC. In most cases, it can take a program written in Amiga BASIC and compile it without any changes whatsoever. The bad news is also that it is 100% compatible with Amiga BASIC. Since Amiga BASIC has numerous bugs and idiosyncracies, as well as some animation routines which do not work properly, these shortcomings were not fixed but were in fact preserved by Absoft in order to maintain compatibility.

The compiler can be used in both the CLI and Workbench environments, but you must always start out with an Amiga BASIC program contained in an ASCII text file. If you used Amiga BASIC itself to write the program, it must be saved in the ASCII and not the default format. Moreover, all of your Subprograms must appear at the end of your program. Absoft has thoughtfully provided a short program to automatically rearrange your BASIC program to meet this requirement. For purposes of explanation, let's assume that we want to compile a program titled "BasicProgram". From CLI, simply type "ac-basic BasicProgram" and you're off and running. From the Workbench environment, select the menu item designated as Load and type in "BasicProgram". In either case, the Command Screen will appear shortly. For most applications, you need do no more than click on the "Start" button. But as will be discussed below, Absoft has provided a number of advanced options to produce an even faster running program.

The compiler will make several passes through your program, and if all goes well you'll end up with a compiled version saved to your source disk. But as we know, all never goes well, and the compiler is quite likely to find some error in your BASIC program (such as

a FOR loop without a NEXT). There are several ways errors are handled. The default mode lists the errors on your screen with a portion of the program line where the error occurred. This is fine for only a few errors, but if you have many, there is option to save them in a text file for printout. The best but most time consuming option adds line numbers to your program and saves both the numbered program and errors (referenced to the line) for easy cross reference.

You are also shown statistics about your compiled program, including its size and required stack size (which is important only if your program is being run from the CLI). As an added touch, you are told how long it took to compile, and the number of lines processed per minute. I should mention that the compilation time appears to be quite rapid.

There are several other options which will make your compiled program run even faster. Certain commands in Amiga BASIC (such as checking the mouse) utilize event trapping, which slows down your program. If you don't use this feature, you may turn it off. Another drag on the system is constant checks to ascertain whether array variables and numbers are within valid limits. These too can be turned off if you're certain your program won't encounter any problems. Absoft has also provided Static Arrays. Technical discussions aside, suffice to say that this type of array will significantly speed up your program. One valuable addition to BASIC is the Select Case structure. Similar to the ON...GOSUB command, it easily and efficiently executes a block of statements based upon the result of a string or numeric expression.

Perhaps the most important option is the ability to link the compiler's run time library directly to your program. A run time library is, in essence, a supporting program which the compiled program constantly uses during execution. If your compiled program is located on a disk containing the appropriate library (which is located in the L: directory), there is no problem. But in most cases, you will be using or distributing your program on its own disk which may not contain that library. By invoking the Link Run Time option, the compiler will attach the library to your program. The only drawback is that the library consumes an addition 40K of memory and disk space, and it may not be advantageous to link it to each of many small compiled programs you have on a disk. By the way, you may freely distribute the run time library with your compiled program by simply returning a license agreement which comes with *AC/BASIC* to Absoft.

The compiler also supports the use of four "metacommands" which are simply command lines inserted in your BASIC program that tell the compiler what to do during compilation. Using metacommands, you can turn compiler options on and off at selected points in your program, as well as instruct the compiler to ignore blocks of your program. Most important, however, is the metacommand "Include", which inserts subprograms into your program by reference. For example, assume you have a subroutine named "Sort". To include it in your BASIC program named "Database", simply insert the line '$Include "Sort" ' in your program. When the compiler reaches that statement, it will look for the program "Sort" on your disk and process it as part of your main program. Needless to say, this powerful command makes compiling a complex BASIC program with external subroutines quite easy.

All of these capabilities sound great, but the real question is how well and fast does the compiler actually work. I can only judge in an absolute sense since there is no competing product on the market for comparison. But Absoft has taken significant steps in Release 1.3 to correct the bugs and increase the efficiency of the compiler, and that work has paid off. I wrote a short BASIC program which generated random numbers between 1 and 1000, discarded those over 200, and then placed 500 in an array which was then graphed. The program took 19 seconds to run, but when compiled only took 6—a 68% reduction in time! In Amiga BASIC, the Amiga counted to one million in 6 minutes and 12 seconds. The same task took only 2 minutes and 18 seconds in compiled BASIC. Although I didn't time it, text generation and display appears significantly faster. Several other short programs I wrote also exhibited a significant increase in speed. The only real problems I encountered were with animation routines (moving objects and collision detection), but Amiga BASIC itself has problems in this area.

The manual is a several hundred page softbound book. Since the compiler is so simple to use, relatively little of the manual is dedicated to its operation. The largest sections describe and illustrate BASIC language commands and usage, and often clear up



Absoft has taken significant steps in v. 1.3 of AC/BASIC *to correct some known bugs and to increase the compiler's efficiency, and that work has paid off.*

some of the ambiguities found in the Amiga BASIC manual itself. There are many examples, some of which are good short subroutines, and Absoft was thoughtful enough to include all the examples on the program diskette. There are even routines to interface BASIC with machine language programs and to create and display HAM graphics! The disk, which is not copy protected, also contains a nice spreadsheet program written in compiled BASIC, and EvEd, a program to modify and customize the run time library. My only wish is that Absoft would market an enhanced version of *AC/BASIC* which not only "fixed" Amiga BASIC problems, but also added additional features found in Macintosh BASIC (such as the Button command).

As long as there is no other product on the market competitive to Absoft's compiler, it is impossible to tell whether it could be better or faster. But in comparison to Amiga BASIC, there is no question that it significantly increases the speed of your program while at the same time preserving the compatibility and features of Amiga BASIC. While compiled BASIC may never be able to compete with programs written in assembly langauge or C, there are many applications which just don't require the speed of those languages. The power and ease of programming in Amiga BASIC, in conjunction with use of the compiler, now makes BASIC a viable programming alternative on the Amiga. In fact, with only machine-specific changes, your BASIC program can be processed with Absoft's compiler for the Macintosh or IBM PC! For serious BASIC programmers who aren't trying to write arcade games, the *AC/BASIC* compiler is an invaluable tool, and a necessity for BASIC programs that are intended for commercial applications.

Absoft, 2781 Bond Street, Auburn Hills, MI 48057 (phone: 313-853-0050). *—Steve King*

ACCESS-64
Progressive Peripherals & Software
Amiga 1000 with 512K
Disk and hardware: $79.95

Access-64 is a combination of hardware and software that allows your Amiga to use C-64/128 peripherals—1541, 1571, and 1581 (15xx) disk drives and serial printers like the 1525 or MPS 801. With *Access-64* installed, your Amiga can read, write, and format 15xx disks in C-64/128 format. It can also use those drives as Amiga peripherals, with access both from Workbench and the CLI.

Access-64 comes on a non-copy-protected Amiga disk. Its 25-page manual walks you through the basics, but leaves several things unexplained. Most of the software is written in assembly language to squeeze in as much efficiency as possible.

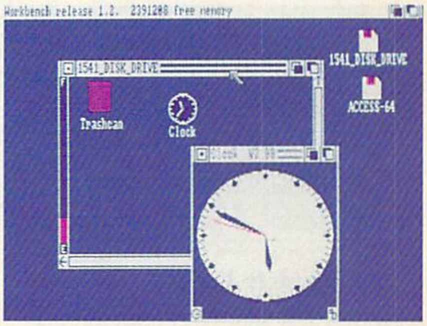
What It Can Do for You

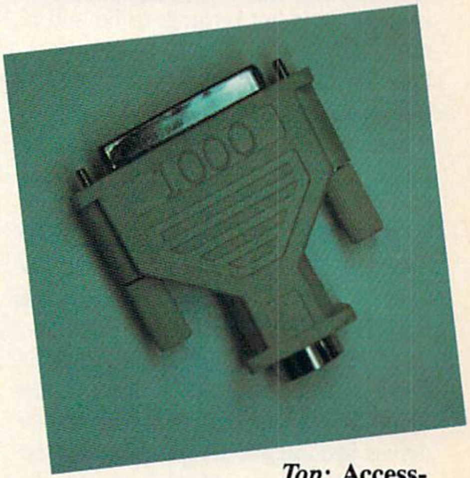
Access-64 can be a valuable tool in a number of situations. You may have many disks full of C-64/128 word processing files that you want to keep as archive copies. Every now and then you'll want to use one of those old files, but on the Amiga. *Access-64*, along with a 15xx drive, will give you ready access to individual files.

Or, you may still consider people who use C-64s/128s to be friends—occasionally swapping computer files and other lies. Whether they are word processing files, certain data files, text downloaded from your favorite BBS or information service, assembler listings, or untokenized BASIC listings, *Access-64* will let you exchange files with your Commodore compatriots.

One of the most likely scenarios is that buying a new Amiga 500 and a monitor tapped you out. It would be nice to have more memory, a second drive, and a laser printer, but they'll just have to wait. *Access-64* lets you use your 15xx drives as Amiga drives, and it lets you daisy-chain on that Commodore serial printer. These won't be the fastest peripherals, but if you already own them, they're free. And you still have your C-64/128 system available when some great old game beckons or when your home has more computer users than computers.

Finally, you may want a cheap way to store Amiga files. With plenty of 5¼" disks lying around the house, your 15xx drive can give you a way to keep backups, utilities you never use but can't bring yourself to delete, and other low-access files.





Top: Access-64 *will bring a C-64 device up as an Amiga icon (see 1541 in upper right corner). Bottom: the 2" square interface.*

FILE COPY TIMES (1)

File Size	From df0: To 15xx	From 15xx To df0:	From df0: To df1:	From df0: To df0: (2)
(using 15xx in C-64/128 format)				
.6K	10 sec	14 sec	–	–
3K	25 sec	36 sec	–	–
93K	9.7 min	17.5 min	–	–
(using 15xx in Amiga format)				
.6K	8 sec	6 sec	9 sec	1.1 min
3K	12 sec	15 sec	9 sec	1.1 min
93K	4.5 min	3.3 min	31 sec	1.3 min

TIMES TO LOAD DOS COMMANDS (1)

Command	Load from 15xx in Amiga format	Load from Amiga's df0:
DIR	15 sec	2 sec
LIST	17 sec	<3 sec
WHY	5 sec	<2 sec
TYPE a 93K file	5 min	2.2 min

(1) Times for different 15xx drives, which performed within 10-15 percent of each other, are averaged.
(2) Includes 6 disk swaps.

TIMES TO FORMAT A DISK

(using 15xx in C-64/128) format)		
Drive type:	1541	2.4 min
	1571	1.6 min
(using 15xx in Amiga format with verify)		
	1541	13 min
	1571	23 min
(using QFormat on a previously formatted 15xx disk)		
	1541	16 sec
	1571	16 sec

...and What It Can't

There are several things that *Access-64* does not purport to be and is not. *Access-64* is not a C-64 emulator. Unlike Software Insight Systems' *GO-64!* or ReadySoft's *The 64 Emulator*, it does not claim to run C-64 software on an Amiga. And unlike Central Coast's *Disk-2-Disk*, which only transfers files and requires an Amiga 1020 drive, *Access-64* will not flag differences between C-64 BASIC and Amiga BASIC or handle REL and USR files.

Access-64 also will not read MS-DOS disks on your 15xx drive. Even using the *Transformer* software, those drives just are not compatible with the MS-DOS format. Finally, *Access-64* does not let you use a 1701 or 1702 monitor with your Amiga. (That's a job for C Ltd's *C-View.*)

The Ware That's Hard

The *Access-64* hardware is a two-inch-square interface with a 25-pin parallel port connector on one side and a 6-pin Commodore serial DIN plug on the other. Because the plastic is molded on, this is not a unit you can have serviced locally. To this interface, you can daisy-chain up to two 15xx drives and one Commodore serial printer. (That's according to the manual. I used three drives and a printer with no problem, but PP&S says this may draw too much power for some Amigas so they only guarantee two drives. By comparison, the C-64 bus allows five drives and one printer.)

The model reviewed here was for an Amiga 1000. It is not compatible, using a gender changer, with an Amiga 500 or 2000. New models designed specifically for the 500/2000 are due out soon. The *Access-64* hardware for the 1000 draws too much amperage from the +5V pin of the Amiga 500/2000 printer port. Connected with a gender changer, it could blow out the CIA chip.

...and Soft

Access-64 utilities allow you to use either the CLI or Workbench to access your C-64/128 files. The files you would most commonly transfer would be word processor or data files. Whether you are transferring from a Commodore disk to the Amiga or the other way around, you need to start with clean files. By clean, I mean that word processing files should have been saved as "text only" or in ASCII format. That will rid them of embedded formatting codes used only by the particular word processor they were created with.

The main file transfer tool for users who prefer Workbench is a program called BusUtil. Without using any pull-down menus, BusUtil displays its options on a single screen. Gadgets allow you to select which 15xx drive you want, to format or get a directory of a disk, and to transfer individual files between 15xx and Amiga drives. BusUtil can automatically create icon files as it transfers files to the Amiga. You also click gadgets to tell BusUtil whether the file type is SEQ or PRG and whether you want an ASCII filter.

The ASCII filter is critical to successful file transfers between the Commodore and Amiga formats. While the Amiga uses standard ASCII codes to represent alphanumeric characters, your C-64/128 uses a dialect called PET ASCII. BusUtil's ASCII filter will convert files between these two versions of ASCII. Without filtering, you could see some strange results of file transfers, with upper case letters turned into graphics and lower case turned into upper.

BusUtil does have a couple of shortcomings. First, it will not give you a directory of the df0: or dfl: Amiga drives. Second, it gives you no way to abort a copy. If you begin to copy a 90K file and then realize that the disk you are copying to has only 80K free, your choices are to reboot or to wait 10 minutes until you get a prompt that the copy has failed because the disk is

full. Last, although it displays a "working" message during file transfers, it gives you no indication of its progress.

For users who like the CLI better than Workbench, *Access-64* comes with the commands DSDir, DSFormat, DSCopy, and DSFilter. These let you work with C-64/128 disks in a 15xx drive. The functions of the first three commands are obvious. The fourth, DSFilter, converts PET ASCII to plain ASCII. Unlike BusUtil, it cannot convert in the other direction. Since DSFilter works with files that have already been transferred, it does not destroy the original file, but creates a new file with a .flt extension.

The format of the DSCopy command is different from AmigaDOS' Copy:

```
DSCopy 8:C64FileName,SEQ TO DF0:
AmigaFileName
```

The 15xx drive is referred to with a number only and you must specify the type of file after the C-64/128 file name. Finally, you must type the "TO" filename. DSCopy will not assume that it is the same as the "FROM" file name. This makes sense because the C-64/128 and Amiga impose different maximums on file name lengths and restrict different characters from file names.

Installation

Access-64 software is supplied on a Workbench 1.2 disk that you can boot from. If you already have a customized boot disk or hard disk, it can be modified easily to accommodate the necessary *Access-64* commands. You'll need to modify two files and copy up to a dozen others onto your boot disk.

The first file you need to modify is Startup-Sequence. It must run three *Access-64* programs, that eat up less than 4K of RAM, to set up the serial port adapter. Then it has to MOUNT and do a DiskChange for each of the new drives (df8:, df9:, and df10:). The second file to modify is MountList in the DEVS directory. Each 15xx drive must be described for DOS. Both files are easy to edit using models on the *Access-64* disk.

The files you need to copy from the *Access-64* disk to your boot disk include two device files that go into the DEVS directory and a dozen files for the C directory. These will require about 70K of space on your boot disk.

15xx Amiga Drives

Besides just transferring files back and forth between a C-64/128 and your Amiga, *Access-64* lets you use your 15xx drives as Amiga disk drives, complete with Workbench icons, as df8:, df9:, and df10:. AmigaDOS will treat these just like regular Amiga drives except that the Amiga will not automatically notice when you change disks in them. You will have to either type DiskChange df8: at the CLI prompt, or click on the SWAP8 icon in the *Access-64* Workbench window.

This does not make a 15xx drive identical to an Amiga drive, however. If you're going to buy a new drive for your Amiga, it should definitely be an Amiga 1010 or equivalent. A 15xx drive will be slower (as we will see later) and will have a more limited storage capacity. On the other hand, 5¼" diskettes are cheap and plentiful compared to 3½" diskettes, so a 15xx drive can provide a cost-effective tool if you have lots of Amiga files to archive.

CAPACITY OF 15xx DRIVES

Drive type:	1541	1571	1581
Storage capacity:	170K	335K	800K

Printers

Any Commodore-compatible printer (with a 6-pin DIN plug) should work with *Access-64*. The current version of the software will not, unfortunately, support graphics on such printers. Assuming that the printer device number is 4, *Access-64* provides two printer drivers. If the default driver causes weird characters to print, you will have to settle for the alternate, which causes the Amiga to ignore mouse and keyboard input while each line prints.

Speed

Since 15xx drives and Commodore printers rely on the serial interface, data transfer will be slower than on a system built solely with Amiga peripherals. To give you some idea of speed, on the facing page are some comparison times for copying files, running DOS commands, and formatting disks.

You see that doing an Amiga format on a 15xx drive is slow. It is much faster to format the disks in C-64/128 format and then use the *Access-64* QFormat utility. QFormat converts a previously formatted C-64/128 diskette to a format usable by AmigaDOS in a 15xx drive.

(1581 drive times will be slightly faster in many cases than the times shown. Formatting a 1581 disk in Amiga format will take less than an hour—but not much less. The 1581 drive cannot read an Amiga 1010 diskette.)

Limitations

Prospective purchasers of *Access-64* should be aware of several limitations. On the hardware side, the manual recommends that you not use IEEE disk drives such as the Commodore 8050 and SFD 1001 due to differences in timing. Similarly, the manual recommends against using IEEE or Centronics interface printers. What you'd be doing in either case is converting the Amiga parallel port into a C-64/128 serial port and then converting that to an IEEE (or Centronics) interface. If you have a parallel (Centronics interface) printer and a couple of 15xx drives, *Access-64* will create competition for your Amiga's parallel port.

On the software side, there are some limitations on disk copies and file copies. When transferring files between C-64/128 and Amiga format, you may transfer only one file at a time —wildcards aren't allowed. And during transfers with either BusUtil or DSCopy, if you try to type on your Amiga, you're likely to lose characters.

When using a 15xx drive as an Amiga drive, you cannot use the Workbench Duplicate command or the CLI DiskCopy command on a single 15xx drive. These commands are okay between two 15xx drives. Finally, you cannot directly copy a file from one 15xx drive, in C-64/128 format, to a second 15xx drive, in Amiga format. You must be an intermediate copy to a regular Amiga drive or RAM: disk.

Access-64 is a cost-effective way of expanding your Amiga and maintaining ASCII file compatibility with a C-64/128. If you don't have all the Amiga peripherals you need (and you don't want to sell your C-64/128 to get them), and if you have more than a handful of files to share between your Amiga and a C-64/128 (more than are practical for a communications program and a null modem cable), you should consider *Access-64*.

Progressive Peripherals & Software, 464 Kalamath Street, Denver, CO 80204 (phone: 303-825-4144).

—Richard Herring

Circle #132 on Reader Service Card

CYGNUSED PROFESSIONAL
ASDG Inc.
Amiga with 512K
Disk; $99.95

CygnusEd Professional is a programmer's text editor for any model Amiga with at least 512K RAM. It provides a fast and flexible means for entering anything from short batch (command sequence) files to assembly—or other—language listings that may run many thousands of lines. What *CygnusEd Professional* (called *CED)* is not, and for good reason, is a full-featured word processor. It lacks things like fancy print formatting, spell checking, and footnote generation.

Speed v. WYSIWYG

CED gains its speed in three ways: by using assembly language subroutines, by loading text files entirely in memory, and by not bothering to display on screen exactly how your document will look when printed. This is an appropriate approach for a text editor. Its concern should be, and is, with rapid text input and editing. While some programmers do use full-blown word processors to develop programs, they trade speed for features they'll never use—like producing an index or inserting graphics.

Since any file you load into *CED* resides completely in RAM, *CED* is able to move very quickly through your text, whether you are jumping to a particular line, doing a search and replace, or taking a leisurely scroll. As an example of *CED's* speed, I loaded a 172K assembly language listing consisting of 9000 lines. Jumping from beginning to end was virtually instantaneous. Scrolling through the file a line at a time took only 2.5 minutes, a darn sight faster than I can skim, much less read. Imagine how surprised I was to cruise through a file in only 45 seconds by adjusting the scroll jump and scroll borders.

A search (or search and replace) is just as impressive. When *CED* looked for a phrase that occurred near the end of my file, it took only 2 seconds to find it.

CED doesn't expect us all to read 172K in under a minute though. It provides various ways to control scrolling speed: by using the SHIFT or ALT keys with the arrow keys, by setting the scroll jump (or smoothness) from 1 to 8 pixels, and by scrolling faster the nearer the mouse pointer is to the edge of the screen.

You will lose considerable speed if you run *CED* in a Workbench window rather than in its own (default) full-screen display. Also, *CED* can keep up with most typists during text entry, but a speed demon can outpace it. If you are inserting lines of text at the beginning of a long document, however, it is not hard to get ahead of *CED*.

The RAM's the Limit

If *CED* has any limitation as a text editor, it's that text files must be loaded completely into RAM. I know, I just used that as a plus for speed. But the other side of the coin is that *CED* itself takes about 170K. After it is loaded, you can open up to 10 "views," which are sort of limited windows.

Each view can show a different file, or you can use several views to see different sections of the same file. It's easy to toggle among different views, and there's even an option to expand the current view as much as possible. (Each view always gets at least one line of text, and a status line showing the size of the file or its name and your position in it.) Since *CED* is fully multitasking, you can see that RAM, as usual, can get pretty scarce.

By adding a single parameter when you load *CED*, you cause it to stay memory resident. You can quit *CED*, then reactivate it with a simple combination keypress. This is much preferable to storing the program in a RAM: disk, which loads just as fast but requires two copies of the program while it is running. One of *CED's* many thoughtful features is that it detaches itself from the CLI that invoked it so you can close that CLI. Of course, *CED* also allows you to keep it attached to the CLI, as you might want to do for sequential execution in a batch file.

Circle #245 on Reader Service Card →

When you first load *CED*, you can load up to 10 text files at the same time by specifying their names on the command line or by using extended select from WorkBench. Once *CED* is resident in memory, you can load multiple files while you reactivate it with a little utility that passes filenames to *CED*.

Loading files into *CED* once it is active is a snap. The requester shows all available drives, logical assignments, and volume names. Click on one and its contents are displayed. If the directory is lengthy, you don't have to wait for the last file. As soon as the one you want appears, click and it will load.

Saving text is also a treat. The status line at the top of each view will show asterisks if that file has been changed since it was last saved. If you have several views open, *CED* gives you a single command to save all changed files. Nice. And my favorite: You can tell *CED* to regularly pop up a requester giving you the option to save your file. Specify any period from five minutes to an hour and a half. This requester will even guilt trip you by noting how many changes you've made since the last save. A fully automatic save feature would be nice, but given the speed of floppy access, *CED's* save option is fine.

CED will even create an icon for your file as it is saved and will let you specify a default tool to run and load that file when it is selected.

Another save feature, safe saves, is valuable when you save a file that already exists on the disk. Rather than overwriting the old file, the new version is saved under a temporary name. Only after a successful save is the old file deleted and the new one renamed. If you have the unreliable power that occasionally haunts my neighborhood, this could be a godsend.

Electrical glitches are not the only phantoms our Amigas face. There is also the dreaded Guru. Although *CED* was quite well behaved in all my tests, its multitasking capability could subject your text to the poor manners of other programs. Once again, *CED* to the rescue. A utility program will search your RAM after a crash to find any *CED* files that were there before you rebooted. You select which ones to save. But use caution before you overwrite an existing file. The crash can corrupt your data. Or if you let Startup-Sequence load up memory on reboot, it can kill part of a *CED* file. (I lost 1500 lines of a program in one test.)

Never Board by This Key

That *CED* has pulldown menus is so common it isn't worth mentioning. That there are keyboard alternatives for nearly every menu command is. Most menu features can be invoked by holding either Amiga key and hitting one other key. Occasionally you will also have to hold down the shift key.

Even better, most non-menu features can be controlled from the keyboard too. Such as? Such as answering Yes, No, Resume, or Quit to a requester and toggling gadgets in the Search/Replace requester (case sensitive, search backward, etc.).

A feature that can be critical to programmers is the ability to enter any ASCII character. The SetMap command will control which 256 characters the Amiga recognizes, but the keyboard certainly can't reproduce them all. *CED* allows you to enter any character as its ASCII equivalent.

There may be points in your text that you refer to, or edit, regularly. *CED* lets you leave up to three markers and jump to any of them instantly. You can also jump back to the position the cursor occupied before the screen was last redrawn. Movement of the cursor is easily controlled by combination keystrokes (like Intuition uses in string gadgets) to jump to the beginning or end of a line. Or you can move by full screen, half screen, word, or character.

Blocks can be marked, cut, copied, or saved. *CED's* cut and paste (block) options let you move not only the horizontal, full-width blocks we are all familiar with, but also vertical, or columnar blocks. This gives you an easy way to handle comments in an assembly listing or to create multicolumn text. Once you create multiple columns, however, you can't edit much because *CED* does not "see" the columns except when you move them.

CED has six ways to delete text. The Delete and Backspace keys do a character at a time. Then come delete word, block, and line, and delete to end of line. Five delete buffers are paired with the various ways to delete text. (Delete line and delete to EOL share a buffer.) Undelete commands let you restore the text from any buffer. In the best of all possible worlds, I might like to have more than one deleted block buffer, but *CED's* buffers do give you tremendous flexibility.

Undelete a single character? Big deal you say? In other programs maybe, but to *CED* a single character may be much more. With CapsLock on, your Amiga's function keys become 40 different escape code sequences to control your

printer. If you don't want these codes to display, *CED* can hide them under the next regular character, which will appear in reverse video as a reminder. Delete that character and you delete the hidden codes with it. Undelete it somewhere else and you have successfully moved them.

So hidden codes don't become a bugbear, *CED* automatically displays them during a search and replace operation. Unfortunately, when escape codes are visible they will screw up line lengths (with word wrap on) and paragraph reformatting.

CED has full macro capability. Combinations or series of keystrokes can be assigned to represent a sequence of commands or a string of text. About the only limitation is that the normal alphanumeric keys cannot be reprogrammed. So A by itself can't be a macro, though CTRL-A, ALT-A, or SHIFT-ATL-A can.

Entering macros is interactive. As you enter commands, they actually take place so you know your macro will work. No obvious way exists to edit existing macros. Macros will not handle string requesters, like loading a new file. Since setting up a bunch of macros is work, *CED* lets you save and load macro files. You might want different macro files for C, assembler, and letters home. The macro file S:CEDMacros will load automatically with *CED.* You can even set up a macro file to have *CED* emulate another editor or word processor. (*CED* comes with just such a file for MicroEmacs.)

After using *CED* for awhile, you'll get all its options set just like you want them. You can save this "environment" to a file so you will never have to reset the same options. Keep several environment files for different types of programming. Then when you load a Modula 2 listing with a filename ending in .M2 (for example), it will automatically load the environment called CEDdefaults.M2. Environments include everything from screen size and colors to macros, tab settings, and the placement of the scroll bar.

Odds and ends that deserve mention are rotate block (for networks like UseNet), strip carriage return (for imported files), convert between upper and lower case, wildcards in search strings, 1024 characters per line (maximum), auto indent, repeat a character or command any number of times, non-break and visible spaces, paragraph reformatting, and find matching parentheses, brackets, and braces.

Accessories and Accomplices

CED is not a word processor. Yet for entering and revising text it's wonderful. Does it have a place in the lives of people who write rather than program? Maybe. A qualified maybe. The manual suggests using *CED* to enter text and your regular word processor to format and print that text. Only in a multitasking environment is this reasonable for most writers.

For programmers, *CED's* print features are acceptable. Print to screen (Type or Copy) and you have nice clean text with no special format codes. Print to a printer and *CED* multitasks, letting you go back to editing right away, even editing the same file (though print spooling does prohibit you from exiting *CED* easily). You can print a file

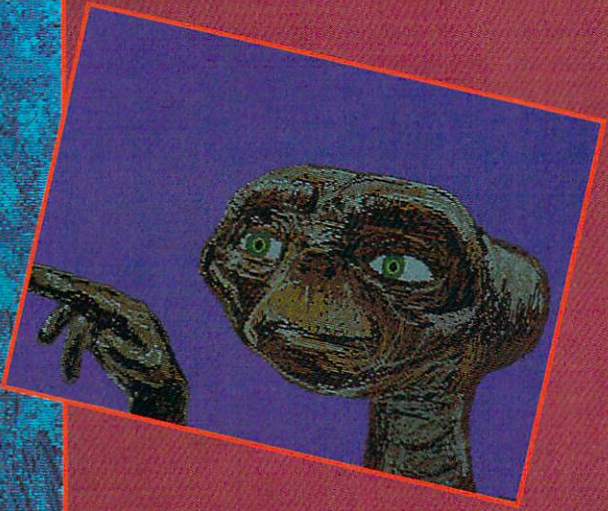
Continued on page 74

Art Gallery

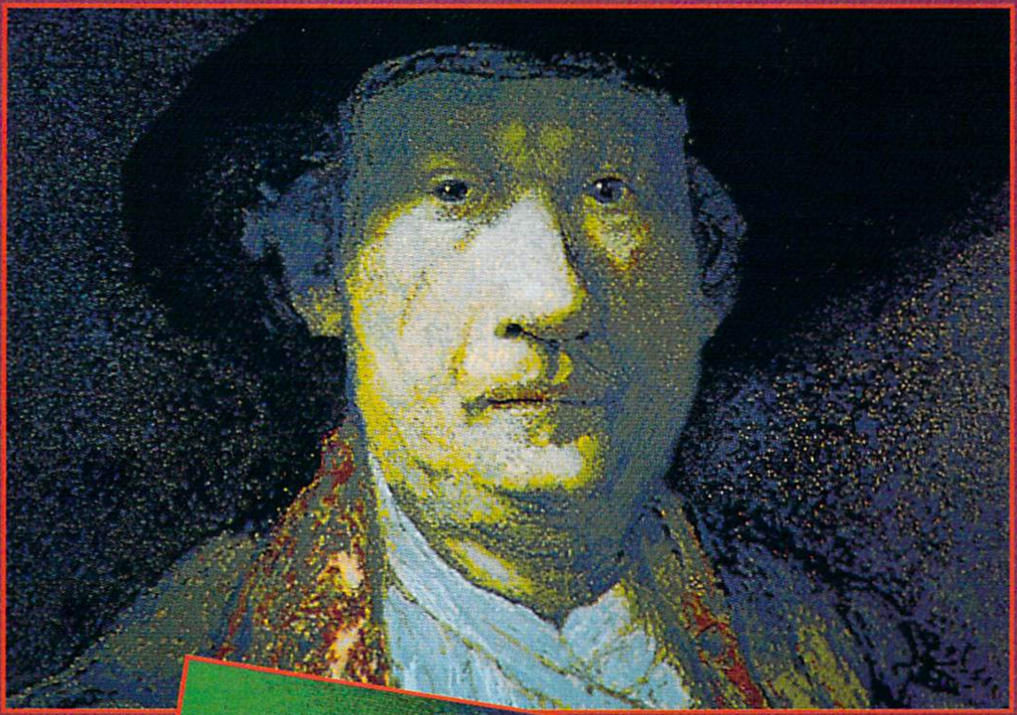
The *Art Gallery* offers the opportunity for fame and fortune to aspiring Commodore artists. Send your work on disk to *Art Gallery*, Ion International Inc., 45 West 34th Street—Suite 500, New York, NY 10001. Label each disk with the date of your submission, your name and address, the number of images on the disk, and the graphics or paint program used. Graphics produced on the Amiga are eligible for inclusion in *Ahoy!'s AmigaUser*; C-64, C-128, and Plus/4 images are eligible for inclusion in *Ahoy!* If your image is published, you will receive a free one-year subscription. Current subscribers will have their subscription extended by one year.

Note that the *Art Gallery* is not a contest. Published pictures are selected in an arbitrary and capricious fashion by the Art Director, based solely on their artistic merit.













Clockwise from top left, facing page: Does she look more like a spaced-out Sally Struthers—or a down to earth Stevie Nicks? You decide about *Nightbride* by Alisa Lowden (State College, PA), a low-res image; finally on home video and in the *Art Gallery* years after his initial success, *ET* by Jonathan Joshi (Jamaica, NY); and *Hat Lady* by Greg Wilcox (Minneapolis, MN), in low-res on *Digi-Paint*. Top to bottom, this page: the famous *Rembrandt* self-portrait loses little in the translation to the Amiga screen by Terry Lowe (Vancouver, BC), in hi-res on *Deluxe Paint; Moe Larry Curley* by Roger McVoy (Phoenix, AZ) in HAM mode on *Photon Paint;* and *Old Man* (have we got a girl for you!), also by Greg Wilcox on *Digi-Paint.*

ABM

A Strategic Defense Simulation for Your Amiga

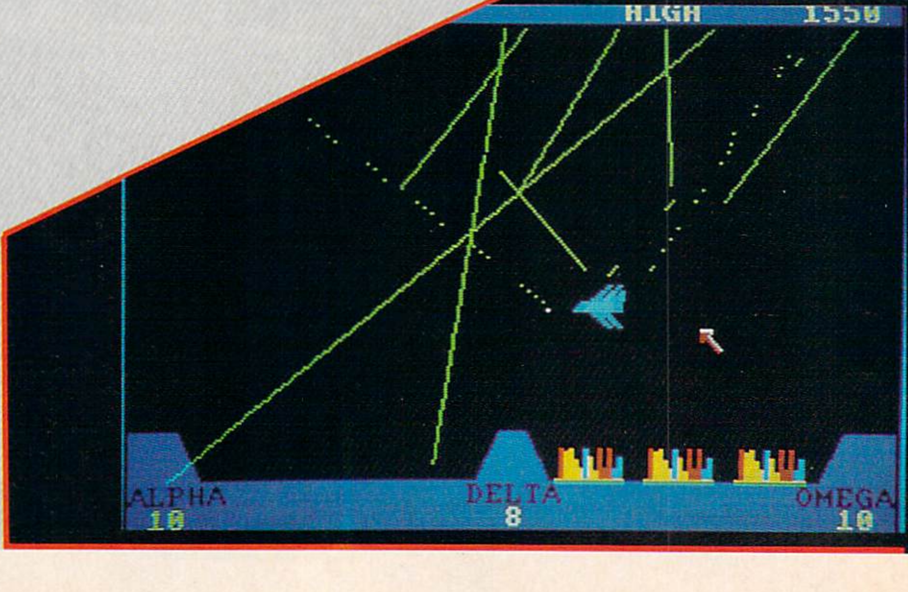
Caution! Don't even *think* about entering this program until you've read your Amiga BASIC manual and familiarized yourself with your computer's screen editor!

Once you've done the necessary background work, we'll be glad to assist you with any problems. Call 212-239-0855 (if busy or no answer after three rings, 212-239-0855), weekdays from 8:30-4:30 EST.

```
'ABM (Anti-Ballistic Missile)
'By John M. Haubrich, Jr.
'1800 Maine Street
'Quincy, IL  62301
'
'This version is called "ABM_Home" since it is free from MENU event
'trapping.  This makes it easier to debug!
'
MENU OFF
TIMER OFF
MOUSE OFF
highscore = 0
GOSUB InitArrays
GOSUB InitShapes
DEF FNlive = (cityon(1)=1)+(cityon(2)=1)+(cityon(3)=1)+(cityon(4)=1)+(cityon(5)=1)+(cityon
(6)=1)
GOSUB InitScreen
Restart:
bomberflag = 0
CLS
GOSUB InitLand
GOSUB InitValues
GOSUB RemainMis
GOSUB PlaceCities
GOSUB StartScreen
actbase = 2
main:
  ON MOUSE GOSUB HumanFire
  MOUSE ON
 AnotherRound:
  bomberflag = 0
  COLOR 5,0
  CLS
  GOSUB InitLand
  GOSUB PlaceCities
  GOSUB InitRound
  GOSUB RemainMis
  COLOR 7,0:LOCATE 8,16:PRINT USING "WAVE ###";wavenumber
  FOR k=1 TO 4:FOR j = 900 TO 600 STEP -40:SOUND j,1,255,0:NEXT j,k
  FOR i = 1 TO 1500:NEXT i
  COLOR 5,0:LOCATE 8,16:PRINT "         ":COLOR 5,5
 GameLoop:
  GOSUB RemainMis
  chbase = VAL(INKEY$):IF chbase > 0 AND chbase < 4 THEN actbase = chbase
  IF score > highscore THEN highscore = score
  LOCATE 1,1
  PRINT USING " #######  SCORE            HIGH  ####### ";score,highscore
  GOSUB FireMissiles
  GOSUB UpdateMissiles
  IF (RND > .9995-.005*wavenumber) AND (bomberflag = 0) THEN GOSUB Bomber
  IF bomberflag > 0 THEN GOSUB BomberScroll
  IF misleft > 0 THEN GameLoop
  FOR i = 1 TO 1000:NEXT i
  GOSUB Bonus
  IF score >= bonuslimit THEN GOSUB BonusCity
  IF FNlive = 0 THEN GameOver
  wavenumber = wavenumber + 1
  level = level + 1:IF level > 8 THEN level = 8
 GOTO AnotherRound
 END

 InitScreen:
  SCREEN 2,320,200,3,1
  WINDOW 3,"",(0,0)-(311,185),0,2
  WINDOW OUTPUT 3
  PALETTE 0,0,0,0
  PALETTE 1,.4,.6,1    'blue
  PALETTE 2,1,.73,0    'orange
  PALETTE 3,.93,.2,0   'red
  PALETTE 4,1,1,1      'white
  PALETTE 5,0,0,1    'dark blue
  PALETTE 6,1,1,.13    'yellow
  PALETTE 7,.33,.87,0 'green
 EndInitScreen:RETURN

 InitLand:
  COLOR 5,0
  LINE (311,157)-(311,185),5
  LINE -(0,185),5
  LINE -(0,157),5
  LINE -(19,157),5
  LINE -(29,175),5
  LINE -(140,175),5
  LINE -(150,157),5
  LINE -(160,157),5
  LINE -(170,175),5
  LINE -(281,175),5
  LINE -(291,157),5
  LINE -(311,157),5
```



You are in command of three powerful missile bases guarding six helpless cities from a full-scale attack. Each wave of enemy missiles gets faster and new alien weapons are introduced as time progresses. During these vicious attacks, you alone are left to defend the remaining traces of your civilization with primitive anti-ballistic missiles (AMBs). You will face bombers, laser bursts, and an overwhelming number of warheads in a fight to stay alive. Failure means death!

ABM is an arcade game based on the classic *Missile Command*. It is written entirely in Amiga BASIC and runs under DOS 1.1 or 1.2 with 512K RAM. Since *Missile Command* is still one of my favorite video games, I tried to implement the "real thing" as closely as possible. A few changes had to be made, however, to keep the program size down and the speed up to par.

Just as in the original, you are in command of three missile bases: Alpha, Delta, and Omega. Each base has a stock of 10 ABMs. Surrounding the middle base are three cities to the left and three to the right. The bases are labeled underneath and the number of missiles remaining appears below the name. Enemy missiles fall from the top of the screen at different speeds as the game progresses.

Play starts at Wave 1 with nine very slow incoming warheads. The number and speed of the missiles increase with each wave up to a maximum of 37 missiles with a velocity 8x normal. The game continues indefinitely at level 8 till all your cities have been

By John Haubrich

```
  PAINT (5,180),5,5
  COLOR 0,5:LOCATE 23,1:PRINT"ALPHA";TAB(18);"DELTA";TAB(35);"OMEGA";
EndInitLand:RETURN

StartScreen:
  COLOR 7,0
  LOCATE 1,26:PRINT USING "HIGH  ####### ";highscore
  COLOR 3,0
  LOCATE 3,18:PRINT"A B M"
  COLOR 1,0
  LOCATE 5,9:PRINT"By John M. Haubrich, Jr."
  COLOR 6,0
  LOCATE 8,7:PRINT"BONUS CITY EVERY 75000 POINTS"
  COLOR 0,1
  LOCATE 17,7:PRINT"(C) 1987   John Gop Software"
  LOCATE 18,11:PRINT"All Rights Reserved."
  COLOR 7,0
  xmin = 40:xmax = 280:ymin = 90:ymax = 110
  LINE (xmin,ymin)-(xmax,ymin),4
  LINE -(xmax,ymax),4
  LINE -(xmin,ymax),4
  LINE -(xmin,ymin),4
  LOCATE 13,8:PRINT"Press LEFT BUTTON to begin."
  WHILE MOUSE(0)<>0:WEND
CheckMouse:
  IF MOUSE(0)=1 THEN
    GOTO EndStartScreen
  ELSE
    GOTO CheckMouse
  END IF
EndStartScreen:RETURN

InitShapes:
  DIM city(112)
  RANDOMIZE TIMER
  LINE (0,11)-(28,11),2
  LINE (0,12)-(28,12),2
  FOR j = 2 TO 26 STEP 2
    h = RND*10-2
    c = RND*2+1
    LINE (j,10)-(j,h),c
    LINE (j+1,10)-(j+1,h),c
  NEXT j
  GET (0,0)-(28,12),city
  CLS
  DIM Lbombershape(112)
  COLOR 1,0
  CLS
  AREA (1,5):AREA (2,5):AREA (6,9):AREA (8,9):AREA (2,3):AREA (3,3)
  AREA (11,9):AREA (14,9):AREA (17,12):AREA (11,12):AREA (3,18):AREA (2,18)
  AREA (8,12):AREA (2,12):AREA (1,5)
  AREAFILL
  GET (0,0)-(18,19),Lbombershape
  DIM Rbombershape(112)
  CLS
  AREA (17,5):AREA (16,5):AREA (12,9):AREA (10,9):AREA (16,3):AREA (15,3)
  AREA (7,9):AREA (4,9):AREA (1,12):AREA (7,12):AREA (15,18):AREA (16,18)
  AREA (10,12):AREA (16,12):AREA (17,5)
  AREAFILL
  GET (0,0)-(18,19),Rbombershape
  CLS
EndInitShapes:RETURN

InitValues:
  FOR j = 1 TO 6
    cityon(j)=1
  NEXT j
  level = 1
  score = 0
  score2 = 0
  bonuslimit = 75000&
  bonusmultiplier = 75000&
  wavenumber = 1
EndInitValues:RETURN

InitRound:
  actbase = 2
  mbase(1,0) = 1:mbase(1,1) = 10
  mbase(2,0) = 1:mbase(2,1) = 10
  mbase(3,0) = 1:mbase(3,1) = 10
  enemymissiles = 5+level*4
  nummissiles = enemymissiles
  misleft = enemymissiles
  miscluster = 0
  GOSUB MissileSlopes
EndInitRound:RETURN

PlaceCities:
```

```
    FOR j = 1 TO 6
      IF cityon(j) = 1 THEN
        PUT (37*j-(j>3)*29-4,163),city,OR
      END IF
    NEXT j
  EndPlaceCities:RETURN

  MissileSlopes:
    target(0) = 15:target(1) = 47:target(2) = 84:target(3) = 121
    target(4) = 155:target(5) = 187:target(6) = 224:target(7) = 261
    target(8) = 295
    FOR j = 1 TO enemymissiles
      xtop(j) = RND*300+10
      mistarg(j) = INT(RND*8+.5)
      xbot(j) = target(mistarg(j))
      m(j) = 165/(xbot(j)-xtop(j))
    NEXT j
  EndMissileSlopes:RETURN

  InitArrays:
    DIM cityon(6)
    DIM m(40)
    DIM xtop(40),xbot(40)
    DIM mx(40),my(40)
    DIM mis(40)  'missile is active if = 1
    DIM mbase(3,1)  '(x,0)=active if 1,(x,1)=number abms left in base x.
    DIM target(8)
    DIM mistarg(40)
  EndInitArrays:RETURN

  FireMissiles:
    IF enemymissiles > 0 THEN
      IF miscluster < 6 THEN
        miscluster = miscluster + 1
        mis(enemymissiles) = 1
        mx(enemymissiles) = xtop(enemymissiles)
        my(enemymissiles) = 10
        enemymissiles = enemymissiles - 1
      END IF
    END IF
  EndFireMissiles:RETURN

  UpdateMissiles:
    FOR upj = nummissiles TO enemymissiles STEP -1
      IF mis(upj) = 1 THEN
        newy = my(upj) + level
        IF m(upj) <> 0 THEN newx = mx(upj) + (newy-my(upj))/m(upj)
        LINE (mx(upj),my(upj))-(newx,newy),7
        mx(upj) = newx:my(upj) = newy
        IF my(upj)> 175 THEN GOSUB CheckHit
      END IF
    NEXT upj
  EndUpdateMissiles:MOUSE ON:RETURN

  CheckHit:
    LINE (xtop(upj),10)-(xbot(upj),175),0
    LINE (xtop(upj),11)-(xbot(upj),175),0
    mis(upj) = 0
    xhit = mistarg(upj)
  CheckHit2:
    IF xhit = 0 THEN basenumber = 1:GOSUB DestroyBase
    IF xhit = 1 THEN dcit = 1:GOSUB DestroyCity
    IF xhit = 2 THEN dcit = 2:GOSUB DestroyCity
    IF xhit = 3 THEN dcit = 3:GOSUB DestroyCity
    IF xhit = 4 THEN basenumber = 2:GOSUB DestroyBase
    IF xhit = 5 THEN dcit = 4:GOSUB DestroyCity
    IF xhit = 6 THEN dcit = 5:GOSUB DestroyCity
    IF xhit = 7 THEN dcit = 6:GOSUB DestroyCity
    IF xhit = 8 THEN basenumber = 3:GOSUB DestroyBase
  EndCheckHit:
    misleft = misleft - 1
    miscluster = miscluster - 1
  RETURN

  DestroyCity:
    cityon(dcit) = 0
    ctr = target(dcit-(dcit>3))
    CIRCLE (ctr,168),15,3:PAINT (ctr,168),3
    CIRCLE (ctr,168),15,0:PAINT (ctr,168),0
    FOR j1=1 TO 3:FOR j2=150 TO 200 STEP 50:SOUND j2,1,255,0:NEXT j2,j1
  EndDestroyCity:RETURN

  HumanFire:
    junk = MOUSE(0):IF junk >= 0 THEN EndHumanFire
    abmx = MOUSE(5):abmy = MOUSE(6)
    IF abmy < 10 OR abmy > 145 THEN EndHumanFire
    IF abmx < 10 OR abmx > 301 THEN EndHumanFire
    IF mbase(actbase,0)=0 THEN SOUND 1400,2,255,0:GOTO EndHumanFire
    IF mbase(actbase,1)=0 THEN SOUND 1400,2,255,0:GOTO EndHumanFire
```

destroyed.

GAME CONTROLS

The mouse arrow serves as your missile pointer. Simply roll the pointer to a location just ahead of the incoming missile and press the left button. One of your ABMs will zip to the target and burst into a white cloud 20 pixels in diameter. If you score a hit, the incoming missile will disintegrate with only a vapor trail left behind. The number of missiles remaining in your current base will be decremented by one. If you hear a tone when your ABM fires, your supply is getting low and "LOW" is printed under your base. When no more missiles are left, "OUT" will be displayed, accompanied by a high beep when the left button is pressed. Missiles will not fire on the extreme left or right edges of the screen, nor near the top of your bases or cities.

To switch from one base to another, hit "1", "2", or "3" on the keyboard for each of your three bases. That is, "1" for Alpha, "2" for Delta, and "3" for Omega. (I find it easiest to use the keypad!) You can switch freely from base to base while the computer keeps track of your expenditures. Of course, if an enemy missile hits your base, the entire base, including its stock of ABMs, is completely destroyed during that wave.

Once you have destroyed all incoming missiles, your bases are fully restocked with ABMs. Also, bonuses are given for each remaining missile and city at the end of the wave. Cities are worth 100 points times the wave number (up to 8) and missiles are worth 5 points times the wave number. You are awarded a bonus city every 75,000 points. If you already have six cities (which is unlikely), your bonuses will be saved for the *near future!* (Hint, hint.)

ENEMY ARSENALS

There are only two types of enemy weapons, but this is two too many! The missiles are 100% accurate – they *never* miss a target unless you stop them. After each wave

is successfully completed, four more missiles are added to the enemy's arsenal for the next attack, up to a maximum of 37 missiles (there are nine on the first wave). "Now wait a minute, they've got 37 missiles but I've only got 30 ABMs," you say? Right! That means you'll either have to destroy two or more missiles with one shot or be selective about the warheads you knock out! After all, why protect empty missile bases or nonexistent cities?

If that's not enough to make you squirm, take a look at the Bomber. The Bomber makes frequent visits as you survive more attacks. He enters from either side of the screen accompanied by a high-pitched chirp. His speed increases with each wave. This special plane is equipped with a laser cannon powerful enough to obliterate an entire city! The laser burst cannot be stopped by ABMs, so the only defense against bombers is to get them before they get *you!* It's not really worth mentioning, but after one shot, the Bomber's energy is so depleted he can't fire again (until the *next* visit, of course!)

Two more phenomena you may (or may not) encounter during the game are the Betabomb and the Disruptor Cloud. The Betabomb looks no different from any other incoming missile. When the bomb explodes, it shakes the ground and messes up your screen. The condition is not corrected until the end of the wave. The Disruptor Cloud is caused by a manufacturing error in your own missiles. Occasionally, when your ABM destroys an enemy missile, the white explosion cloud will remain on the screen. This will cause problems if you try to fire another ABM into the cloud. For example, if a missile is falling through the cloud toward one of your cities, you must wait until it is *outside* of the cloud. Otherwise, your ABM will be totally ineffective!

A few last words before I give you some hints on survival. First, the program uses three bitplanes for a total of eight possible colors on each screen. Second, the PUT and

```
  ON actbase GOTO alphafire,deltafire,omegafire
alphafire:
  LINE(15,156)-(abmx,abmy),1
  LINE(15,156)-(abmx,abmy),0
  GOTO explode
deltafire:
  LINE(155,156)-(abmx,abmy),1
  LINE(155,156)-(abmx,abmy),0
  GOTO explode
omegafire:
  LINE(295,156)-(abmx,abmy),1
  LINE(295,156)-(abmx,abmy),0
explode:
  mbase(actbase,1) = mbase(actbase,1) - 1
  IF mbase(actbase,1) < 4 THEN LOCATE 24,actbase*18-17:COLOR 6,5:PRINT"LOW";:SOUND 400,5,2
55,0
  IF mbase(actbase,1) = 0 THEN LOCATE 24,actbase*18-17:COLOR 6,5:PRINT"OUT";
  CIRCLE (abmx,abmy),10,4:PAINT (abmx,abmy),4
  FOR explj = 1 TO nummissiles
    IF mis(explj) = 1 THEN
      IF POINT(mx(explj),my(explj)) = 4 THEN
        mis(explj) = 0
        LINE (xtop(explj),10)-(mx(explj),my(explj)),0
        misleft = misleft - 1
        miscluster = miscluster - 1
        score = score + 100*level
        FOR jl=1000 TO 600 STEP -75:SOUND jl,1,255,0:NEXT jl
      END IF
    END IF
  NEXT explj
  IF (POINT(bx+8,bombery+9) = 4) AND (bomberflag > 0) THEN
    bomberflag = 0
    score = score + 250*level
    CIRCLE (bx+8,bombery+9),14,1
    PAINT (bx+8,bombery+9),1
    CIRCLE (bx+8,bombery+9),14,0
    PAINT (bx+8,bombery+9),0
    FOR jl=1000 TO 600 STEP -75:SOUND jl,1,255,0:NEXT jl
  END IF
  CIRCLE (abmx,abmy),10,0:PAINT (abmx,abmy),0
EndHumanFire:MOUSE OFF:RETURN

GameOver:
  COLOR 2,0
  CLS
  LOCATE 11,7:PRINT"G  A  M  E     O  V  E  R"
  LOCATE 13,7:PRINT"Hit LEFT BUTTON to replay"
  WHILE MOUSE(0)<> -1:WEND
EndGameOver:GOTO Restart

Bonus:
  COLOR 1,0
  CLS
  cbcount = 1
  LOCATE 11,14:PRINT"BONUS POINTS"
  COLOR 2,0
  numcbonus = cityon(1)+cityon(2)+cityon(3)+cityon(4)+cityon(5)+cityon(6)
  FOR j = 1 TO numcbonus
    cbonus = cbonus + 100*level
    score = score + 100*level
    IF score > highscore THEN highscore = score
    LOCATE 1,1:COLOR 0,2
    PRINT USING " #######  SCORE           HIGH  ####### ";score,highscore
    LOCATE 14,4:COLOR 1,0:PRINT USING "####";cbonus
    PUT (40+30*cbcount,100),city
    SOUND 150,5,255,0
    cbcount = cbcount + 1
    FOR i = 1 TO 1000:NEXT i
  NEXT j
  cbonus = 0
  mbonus = mbase(1,0)*mbase(1,1)+mbase(2,0)*mbase(2,1)+mbase(3,0)*mbase(3,1)
  IF mbonus > 0 THEN
    mbonuspts = 0
    FOR j = 1 TO mbonus
      mbonuspts = mbonuspts + 5*level
      score = score + 5*level
      LOCATE 16,4:COLOR 1,0:PRINT USING "####";mbonuspts
      LOCATE 16,9+j:COLOR 3,0:PRINT"^";
      SOUND 1500,1,255,0
      IF score > highscore THEN highscore = score
      LOCATE 1,1:COLOR 0,2
      PRINT USING " #######  SCORE           HIGH  ####### ";score,highscore
      FOR i = 1 TO 25:NEXT i
    NEXT j
  END IF
  FOR i = 1 TO 5000:NEXT i
EndBonus:RETURN

BonusCity:
```

```
  bonuslimit = bonuslimit + bonusmultiplier
  flag = 0
  citybonus = citybonus + 1
  IF FNlive > -6 THEN
    FOR j = 1 TO 6
      IF (cityon(j) = 0) AND (citybonus > 0) THEN
        cityon(j) = 1
        citybonus = citybonus -1
        flag = 1
      END IF
    NEXT j
  END IF
  IF flag = 1 THEN
    flag = 0
    LOCATE 18,15
    COLOR 1,0:PRINT"BONUS CITY"
    FOR i = 1 TO 10
      SOUND 900+RND*400,2,255,0
    NEXT i
    FOR i = 1 TO 1000:NEXT i
  END IF
EndBonusCity:RETURN

RemainMis:
  LOCATE 24,1
  COLOR 6,5
  'leave 15 and 16 spaces between the gaps in the next line.
  PRINT USING " ##               ##                ## ";mbase(1,1)*mbase(1,0),mbase(2,1)*m
base(2,0),mbase(3,1)*mbase(3,0);
EndRemainMis:RETURN

DestroyBase:
  mbase(basenumber,0) = 0
  COLOR 6,5
  LOCATE 24,basenumber*18-17
  PRINT"OUT";
  ctr = basenumber*140-125
  CIRCLE (ctr,168),5,6:PAINT (ctr,168),6
  CIRCLE (ctr,168),10,6:PAINT (ctr,168),6
  CIRCLE (ctr,168),15,6:PAINT (ctr,168),6
  CIRCLE (ctr,168),15,0:PAINT (ctr,168),0
  FOR j1=1 TO 3:FOR j2=150 TO 200 STEP 50:SOUND j2,1,255,0:NEXT j2,j1
EndDestroyBase:RETURN

Bomber:
  bomberflag = INT(RND*2+.5)
  bomberburst = INT(RND*300)+10 + level*3
  bx = 0 - (bomberflag = 2)*315
  bombery = RND*70 + 30
EndBomber:RETURN

BomberScroll:
  ON bomberflag GOTO BomberLeft,BomberRight
  RETURN
BomberLeft:
  COLOR 1,0
  LINE (bx,bombery)-(bx+19,bombery+20),0,bf
  bx = bx + 2*level
  SOUND 2000,2,255,1
  IF bx > bomberburst THEN
    bomberburst = 1000
    bmbtarg = INT(RND*8+.5)
    LINE (bx+9,bombery+19)-(target(bmbtarg),175),7
    LINE (bx+9,bombery+19)-(target(bmbtarg),175),0
    misleft = misleft + 1
    miscluster = miscluster + 1
    xhit = bmbtarg
    GOSUB CheckHit2
  END IF
  IF bomberflag > 0 THEN PUT (bx,bombery),Lbombershape,OR
  IF bx > 315 THEN bomberflag = 0
EndBomberLeft:RETURN
BomberRight:
  LINE (bx,bombery)-(bx+20,bombery+19),0,bf
  bx = bx - 2*level
  SOUND 2000,2,255,1
  IF bx < bomberburst THEN
    bomberburst = -1000
    bmbtarg = INT(RND*8+.5)
    LINE (bx+9,bombery+19)-(target(bmbtarg),175),7
    LINE (bx+9,bombery+19)-(target(bmbtarg),175),0
    misleft = misleft + 1
    miscluster = miscluster + 1
    xhit = bmbtarg
    GOSUB CheckHit2
  END IF
  IF bomberflag > 0 THEN PUT (bx,bombery),Rbombershape,OR
  IF bx < -20 THEN bomberflag = 0
EndBomberRight:RETURN
```

GET commands are used in place of animation with BOBs or Sprites since both have serious limitations (BOBs flicker like crazy in Amiga BASIC!). Finally, I added a generous helping of sound effects since most people like to hear their enemy wailing in pain as well as see it.

HELP! HELP!

Now, a few words of advice. There are a maximum of six enemy warheads on the screen at one time. Every time you destroy a warhead another will take its place, unless there are none left. So if you notice there are only two or three missiles left, it means the wave is just about over (whew!).

When attempting to hit a Bomber, switch to a base with more than one ABM so that if you miss the first time (the Bomber *must be hit in the center),* you'll have enough backup firepower to blow that turkey away! If there are only a few missiles left on the screen, however, it might be easier to take them out instead. Remember: When all the missiles are destroyed the wave ends—even if the Bomber is in the middle of a raid!

The most important strategy is long term. Bonus cities are awarded from left to right. So any vacancies left of Delta Base will be filled before those on the right. You can use this to your advantage by concentrating your protection over the left half of the screen. To make the game even easier, hit the "3" key before you start each wave so your ABMs will run out on the right side first. That way, after you run out of defenses at Omega Base, you don't have to pay attention to anything heading towards the right side of your screen!

I've given you every hint I know and use. My high score so far is 589,765. It doesn't take too long to get that far, either. If you think you're doing bad, remember that I *wrote* the game and can't master it! I'm quite pleased with the program, but I'm ready to move on to bigger and better things. If anyone has something they'd like to see, send me a letter care of *Ahoy!'s AmigaUser* and I'll see what I can do. ☐

EXEC FILE

Software and Applications for the Small Businessman

By Ted Salamone

I'd like to thank everyone who's corresponded with me concerning this column. Your feedback has been helpful; please keep it coming. Users who requested specific programs or applications, take heart—though I cannot respond to individual inquiries, the information is passed along to appropriate developers and publishers. Send me tips, suggestions, and anything else relevant to the Amiga universe at Salamone & Associates, 42 Canterbury Road, Bridgeport, CT 06606.

TIPS 'N' TRICKS

This issue we start with the section on software selection criteria. (Readers joining us in the middle should pick up the August issue.)

Section I of the selection criteria asks that you define the task required of the software, in general terms. It could be anything from word processing or typography to analog-digital measurement or computerized manufacturing. It shouldn't be more than 15 words.

The next step is to produce an outline of task details. This is the process which the software must be capable of handling or delivering (in case you do not have a predefined process). For word processing, a simple outline could be:

a. import XYZ file format,
b. allow macros to perform automatic reformatting,
c. search and replace on font characteristics,
d. accept XYZ graphic format,
e. output to ABC printer.

The outline starts to develop parameters for the software needed. Task specifics, which follow, refine the parameters in a more quantitative manner. Average size of documents produced, how often such documents are produced, and when they are needed (timing) are essential questions which must be answered. There will be others, based on the particular task you have in mind.

Task performers must also be identified, so the software selected takes their level of experience into consideration. This item also identifies the need for, and extent of, training if the required software happens to be above current levels of expertise.

Timespan and task complexity also provide useful information to the selection process. How long does it take to get the job done? Is the job simple (a level of 1), or is it complex (a 5)? The business impact needs to be weighed, too. Will the proper software increase revenue or efficiency by helping complete more jobs in the old timespan? Will the wrong software have a serious negative impact, and if so, just how serious? Though there are numerous variations on these overall business questions, you should only address the most pressing. It may also be that the software will not have a significant impact, regardless of its inferiority or superiority. In that case, the business impact question should be passed over entirely.

Section II reminds you to take down the vital statistics of the candidates: name of the product, publisher, address, telephone, etc. It also has you classify the product, to help clarify the category of products you should be examining. For example, to edit text you would identify the Word Processor category. For a database you would check Database. Yet, you might need a database product with graphics and need to search both categories. This classification step just forces you to consider all the options, to cast your net wide enough.

Other items covered here include a functional checklist. Which features do you absolutely need; which would be nice to have? Don't forget to look 6 to 12 months down the road to see if there are items you will require. Get them into the functional checklist now!

Minimum and recommended RAM requirements are touched upon, as are the user interface (menus, command lines, command keys, etc.), input methods (mouse, scanners, bar code readers, etc.), availability of help screens, copy protection, and security procedures. (The need for security is identified in Section I.) What has been the history of software upgrades; what software, also of potential interest, imports or exports data from the package under review?

Hardware comes into play next, to identify the proper CPU and peripherals. Do you have the hardware (existing), or must it be purchased (proposed)? The need to add or upgrade existing hardware is quickly and succinctly identified by running down the checklist of storage needs (hard versus floppy, capacity), circuit cards (add-in/on boards), printers (speed, carriage, size, color output, Postscript, etc.), monitor(s), and other peripherals.

Next issue we will get into documentation and support issues. In the meantime, if you want the predesigned forms, send $9.95 in check or money order to Salamone & Associates at the address listed above. Mark SEC in the lower left corner of the envelope for immediate service.

THUMBNAIL REVIEWS

The early months of 1988 have allowed the time to explore a veritable host of products in my office. Here's the skinny on many a topic, and why these programs provide

Contact the following companies for further information on products mentioned in this column:

Discovery Software
163 Conduit Street
Annapolis, MD 21401
Phone: 301-268-9877

Progressive Peripherals & Software
464 Kalamath Street
Denver, CO 80204
Phone: 303-825-4144

RGB Video Creations
3944 Florida Blvd., Suite 102
Palm Beach Gardens, FL 33410
Phone: 305-622-0138

ASDG Inc.
925 Stewart Street
Madison, WI 53713
Phone: 608-273-6585

Software Visions
26 Forest Road
Framingham, MA 01701
Phone: 617-877-1266

particular value in a typical office environment—whether that of a professional, manufacturer, distributor, or service industry. (Due to *Ahoy!'s AmigaUser's* instant success, and subsequent tripling of the number of issues per year, some of these programs are less than newborn. However, this does not detract from their value, as noted below. Subsequent columns will include newer releases, as always, viewed from real life use under normal office conditions.)

Still the best, that's how I describe Discovery Software's *Marauder II*. I like the product so much that I've virtually stopped making copies with Workbench. While most of the work is done to produce single copies of unprotected software for review trials and tribulations, *MII's* multicopy function is great for creating up to four disks of test data at a clip.

Though not necessary most of the time, the ability to align track starting positions (index sync) and verify data make it much easier to copy finicky disks.

Separate utilities add to the program's value and cost effectiveness. For example, Decoder eliminates the need to send additional money to Electronic Arts for unprotected versions of *Deluxe Paint, Deluxe Video, Deluxe Print, Instant Music, Financial Cookbook,* and several entertainment titles. It creates unprotected versions of the source program, primarily so you can copy them to a hard drive.

DiskErr reports on unreadable data. The last time we used it was to identify the faulty tracks on our initial copies of *PixMate* and *VizaWrite Deluxe.* (The originals had been damaged in transit, so we wound up testing them as well as our working copies.)

Other routines enable you to erase previously initialized disks and to check floppy drive speed. The former tends to be superfluous, while the latter is a handy diagnostic for times when nothing seems to work right.

Marauder II is effective and useful where archived data is essential—grandfather, father, son sets of data disks meant to protect against loss of business due to loss of data. Its multicopy function is ideal for these scenarios, provided you have the proper hardware setup. This feature also makes sense where data must be shared between multiple sites; and the protection removal capabilities translate into true hard disk luxury. (Just try running the copy protected version of *Deluxe Paint II* on a hard drive without gaining a few extra gray hairs.)

While we're talking utilities, there's a great series of tutorial programs available from RGB Video Creations. These interactive advanced help routines load first, followed by the application they are designed to assist. Current availability includes *Deluxe Help* for *DigiPaint, Deluxe Paint II,* and *The Calligrapher.* Topics in the works include *AmigaDOS, Photon Paint,* and *Pagesetter.*

Rod Molina and Bob Gilbert are working hard to extend the envelope of tutorial technology. Case in point: while *DH* for *DPII* needs only 512K RAM and a single floppy, advanced features, including truly useful speech synthesis, require one meg. Two floppies and a hard disk drive increase its functionality, just the way they do for almost any other program.

For *DigiPaint,* the tutorial requires 1 meg of RAM; the same is true for *The Calligrapher. Deluxe Help* routines work with all Amigas, and naturally, the other program is needed. *Deluxe Help* does not include *DigiPaint, The Calligrapher,* or *DPII.*

Working from a menu system and concise screen prompts, it takes but a few minutes to set up and load the entire system. It becomes a snap to switch between help and the actual program. Draw an arc, flip back for further instruction; back into the program and finish up. That's all it takes. You can learn from prepared lessons or access the information to brush up on specific points. This flexibility makes *Deluxe Help* programs ideal for novices and advanced users alike.

Though most of the programs supported by the Help series of tutorials are relatively easy to learn, anything which shortens the learning curve increases productivity; and that means increased profitability! Hence the raison d'être for these silicon jewels.

Last year, Progressive Peripherals brought us *CLImate,* a mouse driven DOS shell that intends to simplify DOS and command line interfacing. This was one utility that we had real doubts about.

Once the software proved reliable it turned out to have a number of timesaving and housekeeping business applications. Primarily, *CLImate* helps soften the blow of learning the ins and outs of the command line interface. Mastering CLI is a process best left to technocrats, not people like you and me who view hardware and software as tools of the trade. This utility package also makes it easy for technophobes to quickly and easily become multitasking mavens controlling masses of megs and RAM drives. *CLImate* is the "no tears" shell for AmigaDOS.

While there are other functions in *CLImate,* the most useful have proved to be batch file copying, deleting, moving, and printing. These alone improve productivity immensely, especially considering the high degree of print formatting allowed. The RAM disk is also beneficial, though it is not as easy to implement as it should be (for a point and click utility).

The ability to support 3½" and 5¼" drives is a blessing for Amiga 2000 owners, while support for three floppies and two hard drives potentially benefits any Amigaphile.

Though there are ups and downs in this utility, disk formatting only works across some of the drives it supports. For example, it does provide solutions for types of users outlined above.

Our last utility for this issue is *Facc II* by ASDG, Inc. A floppy drive accelerator with an optional visible control panel, *Facc II* improves disk access time through intelligent buffer caching. This ability lessens wear and tear on floppy drives, decreasing the potential need for expensive repair work and even more costly down time. More important, improved access time means faster throughput. For most computers, including the Amiga, disk drive access time is the slowest, most mechanical process in the entire system. *Facc II* helps break the bonds.

Improvements over *Facc I* and typical public domain accelerators include the ability to address fast memory, to immediately alter the number of buffers allowed, and to remain device independent. That is, the buffers are not attached to a particular drive.

Most first time users will do as I did: load *Facc II* with

the control panel to have easy feature control and performance reporting access. After a few sessions, however, it will not be necessary to "touch and feel"; you will have refined the parameters needed to get the most out of your system and be confident that *Facc II* is working hard.

For users of *Facc I,* this program also retains the original elements. Changing horses is up to you. Technically minded users can go deeper, investigating the potential ties between *Facc II* and their code.

The manuals are delivered on disk, the least costly and least user friendly way to do so. However, due to the very low street cost of *Facc II,* and its demonstrated ability to improve performance, this is a small price to pay. There is one other aspect which needs to be discussed: *Facc II* takes advantage of additional RAM, up to the Amiga's theoretical limits. Therefore, performance improvement improves with the amount of onboard RAM–starting above 512K.

UPDATE

It's always nice to see a publisher improve an already useful product. Gary Samad of Software Visions has done so with *MicroFiche Filer 1.02.* While this is not a revolutionary enhancement, it is an end user oriented, evolutionary upgrade to an already revolutionary product. We found the product still retains its ease of use, remarkable flexibility, and consumer oriented pricing. Also, Software Visions continues to do well on the support side of the coin, offering unlimited free technical help.

Of foremost potential, SV has included their order entry and invoicing system on the distribution disk. It makes good use of the program's capabilities and demonstrates the ease with which small business applications can be delivered with *MFF.* Users and developers should take this as a working example upon which to build new, even more diverse applications for business or professional use. In essence, Software Visions has demonstrated the vertical market potential of this package, something normally left to the likes of *Superbase Professional.*

Other bonuses include full support for international character sets and the ability to import text. The former option is a convenience that becomes a necessity if international clients are a possibility, while the text import function makes mail merge or printed labels an easy reality.

Businessmen and professionals can benefit immensely by adopting the order entry and invoicing system as theirs. Or with slight modification, they can have a custom system at one tenth (or less) of the cost of a traditionally produced custom system.

Microfiche Filer Plus (see *Scuttlebutt,* page 81) promises to be another major step forward. Look for mention of it in a future column.

NEXT TIME

Now that we've identified a number of utilities which should make your everyday existence easier to deal with, the next installment will focus on core applications and complete the software selection guide. Until then, keep the letters coming. ☐

REVIEWS

Continued from page 63

or block, print to the disk or serial port, indent the document, and convert tabs to spaces or vice versa. (With two such conversions, you can change tabs to a different size.)

To test *CED* as a simple word processor, I used it to write this review. Features I regularly use that *CED* supported were custom tabs, centered text, italics, underlining, and left and right margins (though I had to jury-rig the left margin by printing the document indented 12 spaces). Features I missed, that forced me back to a word processor for final printing, were headers, footers, page numbering, double spacing, spell checking, and printing selected pages.

To offset its print limitations, *CED* includes the public domain program PROFF by Yigit and Tress, accompanied by its 1984 manual (34 pages) on disk. PROFF can accomplish most print formatting tasks, including building a table of contents. But it does so only after you imbed command lines in your text. To me, this approach is not only clumsy but also means that my assembler or compiler will choke on those imbedded commands unless I remove them.

On a more positive note, *CED* does support *ARexx*, a separate $50 program from William Hawes. *ARexx* is an interpreted programming/command sequence/string processing/script language that is capable of integrating separate programs if they support it. To my knowledge, the list of supporting programs includes *CED* and *TxEd Plus* (text editors), *AmigaTex* (typesetting), *Zing!Spell*, and *CAPE68K* (assembler), with *MicroFiche Filer* and an Amiga Hypercard-type program coming soon.

ARexx allows two supporting programs to send commands back and forth. *CED* can handle over 100 such commands. Supposedly, you can also write any function in *ARexx* that you feel is missing from *CED*. *ARexx* deserves its own review, but seems to have growing popularity in the programming community.

As we consider other programs *CED* supports, let's not forget all those AmigaDOS commands in your C: directory. You can run any DOS command, including executing batch files, from within *CED*. *CED* only tells you it is executing your command. You'll have to go to the CLI to see the results.

Although this is a review of a single program, I can't help drawing some comparisons to *TxEd Plus*. Many of us have used *TxEd* since it first came out as an alternative to AmigaDOS' ED. *TxEd* and *CED* are, not surprisingly, similar in many ways, although *CED* is the feature-laden member of the pair. (I won't get into Lattice's *Screen Editor* or Metadigm's *Metascribe* here.)

TxEd will load only a single file compared to *CED's* 10. But at only 55K, *TxEd* can be loaded into memory several times to support multiple file editing. Both programs support *ARexx*, and *TxEd Plus* also requires the included ARP.library (part of the AmigaDOS Replacement Project). While *TxEd Plus* is quite speedy—maybe as fast as you'll need—in most of my tests, *CED* still beat it. Nor does *TxEd* (without *ARexx*) provide adequate support for macros.

On the other hand, *TxEd* has user-definable, pull-down menus, which most programmers will love. It comes with a 30-day, money-back guarantee if you're not satisfied. Finally, at $20 less than *CED*, it includes a utility to speed up disk access. *CED* recommends purchase of *Facc II* ($35), a more powerful program also from ASDG, for this purpose.

A Mouse that Roars

Programs written by people who intend to, and do, use them are often works of love where the extra time necessary to get some little goodie just right doesn't have to be justified to the marketing division. The number of special features and nice touches should tell you something about the care with which *CED* was crafted.

Though not major program features, two more nice touches stand out. As soon as you hit any key, *CED* turns off the mouse pointer. Touch the mouse and it's back. No more backhanding the mouse to move the pointer off a variable. And best, whenever a requester pops up, it appears under the mouse pointer. If possible, the cancel option will be directly under the pointer. With keypad alternatives for requesters, *CED* could easily have omitted this—but it didn't.

CED's 98-page manual covers all the program's features well, but does not provide any kind of tutorial approach. Maybe ASDG thinks this isn't necessary for programmers, but not all purchasers will have earned their wings. While the manual has a detailed table of contents, it lacks an index—inexcusable. Support is available from ASDG by phone or mail and on BIX, CompuServe, and UseNet. *CED* is not copy protected, but I wish there were some way to disable the copyright notice that covers the screen until you hit a key every time *CED* is loaded.

Although I haven't had enough time with *CED* yet to use it to develop a significant application, I have taken some old programs and edited/revised them. *CED* has a pleasant mix of easy-to-access features that make me relish the next big job. Full macro capability, keyboard and mouse alternatives, print spooling, auto save, 10 views, and blinding speed have me sold.

ASDG Inc., 925 Stewart Street, Madison, WI 53713 (phone: 608-273-6585). ***—Richard Herring***

FLOTSAM

Send your comments pertaining to Amiga computing, Dan Quayle's military service record, or any other topic to *Flotsam*, c/o *Ahoy!'s AmigaUser,* Ion International Inc., 45 West 34th Street–Suite 500, New York, NY 10001. We can't print every letter, but we read every one, and personally reply to as many as we can.

I enjoyed your second issue. You are maintaining a good quality, informative style. I was interested to read the letter from Rick Jones (Amiga Friends, Orange, CA). I am enclosing my user group's August newsletter in which the editorial addresses the same subject, namely, the need for A1000 owners to stand up and be counted on the issue of 1mb chip RAM ungradability. If enough of the A1000 owners write Commodore we will get some action. Even if Commodore declines to make the adapter they may be moved to aid an outside hardware developer to provide it.

I would like to urge your readers to support this effort. Invest in a stamp and write to one or all of the following–I. Gould, M. Toy, P. Higginbottom, P. Baczor at Commodore Business Machines, Inc., 1200 Wilson Drive, West Chester, PA 19380.

—Frank Turner, Secretary
Scotts Valley Amiga Users Group
Santa Cruz, CA

We at the Mississippi Amiga Support Group have really enjoyed your first two issues of *Ahoy!'s AmigaUser.* Product reviews have been so scarce from other magazines, and the main thing we like to see are hardware reviews. This is critical since so many low cost third party vendors have hit the market. We do not have local access to a dealer which will invest in such hardware, so we look to the reviews in the magazines. Please keep up the good work and give us more third party hardware reviews.

At this time I would like to take issue with a practice by commercial vendors whose copy protection involves modifying the boot sectors. Eliminating this practice will enable all users to install newly received disks and eliminate the problem of the virus. Since this activity will cut into profits, this will never come to pass.

One big complaint from my users group involves determining whether a disk contains a virus or has a modified boot block. There is a simple procedure which will give owners a quick answer to their problem. First, make a backup copy of a Workbench disk. Turn the power to your computer off for at least one minute, to clear out any possibility of an existing virus. Next, insert the suspect disk and boot the computer. Take out the suspect disk and warm-reset the computer with the copy of the Workbench disk. It is best to have your virus checker on this copy of the Workbench disk. Run the virus checker and if it states there is a non-standard boot block, your virus came from the suspect disk. We have used this procedure numerous times and it has successfully detected all viruses on commercial programs which contain non-standard boot blocks.

—Mark W. Harvey, President
Mississippi Amiga Support Group
Biloxi, ME

For the second time this year, I have seen "macro" expanded out, as if it were an acronym. I do not recall the name of the publication in which I first found the term expanded; this letter is in response to the review of *The Works! (Analyze!* portion) in your August 1988 issue.

I feel the expansion of "macro" as "microcomputer automated commands, relative order" is greatly misleading. It ignores over twenty years of computing history, and only serves to perpetuate the impression that computer people form a society with its own cryptic and mysterious language.

"Macro" is short for "macro-instruction." Just as the "micro" in "microcomputer" indicates a small computer, the "macro" in "macro-instruction" implies a large instruction. Or will someone argue that "micro" is short for "miniaturized, internal calculation, register oriented," or some similar phrase?

As an aside, the 1983 edition of "Webster's New Twentieth Century Dictionary, Unabridged" gives:

"macro-, macr-, [from Gr. *makros,* long] a combining form meaning long (in extent or duration), large, enlarged or elongated (in a specified part), as in macrocosm: opposed to micro-."

The earliest appearance of "macros" would be in assembly languages in the fifties: a time when invoking an I/O operation may have required setting up several registers and/or data regions, before calling a system subroutines. The advent of macro-assemblers allowed the programmer to treat the I/O operation as just a *large instruction,* supplying the parameters to the "macro." A good system would even allow the detection of some types of errors (missing arguments) during the assembly phase, rather than having the program abort at run time. A somewhat contrived example follows (in no specific language, though perhaps of Intel derivation):

```
DO__READ     PUSH AF
             PUSH BC
             PUSH DE
             MOV A,UNIT__NUM
             MOV BC,COUNT__EXPECTED
             MOV DE,DATA__BUFFER
             CALL SYS__READ
             MOV COUNT__IN,BC
             POP DE
             POP BC
             POP AF
VERSUS
DO__READ     M__READ UNIT,COUNT__
             EXPECTED,DATA__BUFFER,-COUNT__IN
```

My example(s) used an I/O operation, but other common uses would include character string comparison and search, and extended precision arithmetic.

I hope that this explanation will serve to *demystify* at least one aspect of computing, and supply a little history at the same time. In case some reader should desire justification of my statements, permit me to add that I hold a BS in Computer Science, and have been a professional programmer for the last eight years, working on mainframes and superminis.

—Dennis Lee Bieber
Sunnyvale, CA

A note to Amiga software and hardware developers:

I have generally been dissatisfied with advertisements for Amiga products. Take a look at any of the ads for word processing, desktop publishing, CAD, or any other productivity software in *MacWorld* and *PC World.* They're imaginative, easy to read, and pleasant to look at; not just a listing of features. Hardware advertisements show real people at computers using the light pens, digitizers, graphic tables, and the like.

Amiga users need to see two-page layouts with large typefaces, screen shots of a program's interface, and actual, professional looking newsletters, memos, proposals, and reports, along with more creative documents that only the Amiga can do. I'd also like to see more shots with users at Amiga terminals using software and hardware that you, the developers, have put so much time and effort into creating. The Amiga community deserves better.

P.S. You have created a great mag. Keep it up!

—Robert Dean
New York, NY

See page 50 to find out how you can get free information about products advertised in *Ahoy!'s AmigaUser.*

AMIGA TOOLBOX

By Michael R. Davila

Send your short routines and programming or hardware hints to *Amiga Toolbox*, c/o *Ahoy!'s AmigaUser,* Ion International Inc., 45 West 34th Street–Suite 500, New York, NY 10001. Include the program and source code on a 3½" disk, along with documentation and a printout. If programming in a language other than Amiga BASIC, specify the compiler used and the manufacturer.

PAINT BRUSH

Have you ever wondered how *Deluxe Paint* has the ability to create a custom paint brush out of any portion or section of a picture that is being displayed? Here is a routine written entirely in Amiga BASIC that will do the same. The program makes extensive use of the GET and PUT commands to extract and place bits from the image.

After you've typed in and run the routine, it will prompt you to pick the top left position. You can choose any section of the screen. For your convenience, three circles are drawn so that you can use this as part of your paint brush. Click the left mouse button once and you will see a ghost border appear. This will indicate that you are creating a paint brush. By moving the mouse about you can select how large the paint brush will be. Once you have the desired size, click the left mouse button twice, and presto! You have a custom paint brush. To draw with it, simply move the brush to the desired screen location and press the left mouse button. Use the menu to exit the routine. Now you can paint to your heart's content.

```
' Paint Brush
CLS : DIM ar%(10000)
   CIRCLE(225,80),50,1:PAINT(225,80),1
   CIRCLE(225,80),35,3:PAINT(225,80),3
   CIRCLE(225,80),15,2:PAINT(225,80),2
PRINT"Point and click left mouse ";
PRINT "button for top left position."
x1=1:y1=1
WHILE 1
 m=MOUSE(0)
 IF x1=1 AND y1=1 AND m THEN
    x1=MOUSE(1):y1=MOUSE(2)
    PRINT"Starting coordinates:";x1,y1
    PRINT"Point and double click for";
    PRINT" bottom right corner."
 END IF
 IF x1>1 AND y1>1 THEN
    x2=MOUSE(1):y2=MOUSE(2)
    GET(x1,y1)-(x2,y2),ar%
    GOSUB Getit
     IF m<-1 THEN Fini
     GOSUB Putit
     PUT(x1,y1),ar%,PSET
 END IF
WEND
Getit:
    LINE(x1,y1)-(x2,y1)
    LINE(x2,y1)-(x2,y2)
    LINE(x2,y2)-(x1,y2)
    LINE(x1,y2)-(x1,y1)
 RETURN
Putit:
    LINE(x1,y1)-(x2,y1),0
    LINE(x2,y1)-(x2,y2),0
    LINE(x2,y2)-(x1,y2),0
    LINE(x1,y2)-(x1,y1),0
 RETURN
Fini:
 PRINT"Ending Coordinates   :";x2,y2
   GOSUB Putit
WHILE 1
   m=MOUSE(0)
   x1=MOUSE(1): y1=MOUSE(2)
    IF m>0 AND set=1 THEN GOSUB Paintit
   PUT(x1,y1),ar%
   PUT(x1,y1),ar%
   set=1
WEND
Paintit:
  PUT(x1,y1),ar%,OR
RETURN
```

OBJECT DATA CREATOR

Commodore was nice enough to include a semi-functional BOB and sprite editor on the Amiga Extras disk that was supplied with your Amiga. However, the Object Editor program saves the shape as a data file, and in order to utilize the object it must be loaded off the disk from within your program. If you're like most programmers and like to keep the sprite and BOB information within the main program, or if you're thinking about sending your program off to *Ahoy!'s AmigaUser* for publication, you'll need to convert this file into DATA statements.

This short routine will generate a BASIC listing of DATA statements from a BOB or a sprite and then save it to disk. To use the program, enter the name of the object file that is in your current directory. The routine will then open a file with the same name as the prefix and attach the suffix ".objdat" to it. Once the program finishes creating the DATA statements it will signal "Done! load filename.objdat". To utilize the data file use the MERGE command to incorporate the data into your own program. Once you've done this the next step is to read the data into a character string so that you may assign the shape to an object. The following lines will do this.

```
FOR x = 1 TO N
READ ob : Obj$=Obj$+CHR$(ob)
NEXT x
```

N is the number of data items that are going to be read. Replace the N with the file size number that is located in the first line of the data statements. Obj$ is the string that contains the shape information that will be assigned to an object using the OBJECT.SHAPE command. Once this is done your program will be completely independent of all object files.

```
'Object Data Creator
CLS:INPUT"Enter name of Object file:";nam$
OPEN nam$ FOR INPUT AS 1
obj$=INPUT$(LOF(1),1):CLOSE 1
nam$=nam$+".objdat"
size=LEN(obj$):ps=1
OPEN nam$ FOR OUTPUT AS 1
PRINT#1,"'file size ";size;" bytes."
WHILE(ps<=size)
 PRINT#1,"DATA ";
  FOR i = 1 TO 6
   PRINT#1,ASC(MID$(obj$,ps,1));
   IF i=6 OR ps=size THEN
      PRINT#1,CHR$(13)
    ELSE
      PRINT#1,",";
   END IF
   ps=ps+1 : IF ps>size THEN Leave
   NEXT i
 Leave:
WEND
CLOSE 1:PRINT"Done! load ";nam$;"."
```

EYE ON CLI

Understanding and Using the Command Line Interface

A Batch of Answers

By Richard Herring

This month we will quickly clear up a problem reported by a few readers—missing CLIs. Then we'll begin a discussion that will take a few months, and some input from you, to finish—batch files.

Do you know where your CLI is? If so, skip the next five paragraphs. If not, turn on your computer now.

WHERE OH WHERE

Many of us have our Amigas set up to put us in the CLI when we boot up. But most Amigas are not delivered that way. You should find the CLI icon in the System drawer of your Workbench disk. To open a CLI, double click on the Workbench 1.2 icon. Then double click on the system drawer icon in the lower left of the Workbench window. Last, double click on the CLI icon in the upper right of the System window.

This will open a CLI window, 8 lines high, in the middle of your screen. You can resize and drag it like any window. But to close it, you must type EndCLI at the prompt.

The heinous problem reported by a few users is that the CLI icon isn't there. Some enterprising souls have even searched in other drawers. Well, it is there—sort of. Each program to be selected from the Workbench screen must have an associated icon file that contains the information necessary to start the program.

Some Amigas have been shipped, or set up by dealers, so that the CLI icon does not show. Lucky for us, turning it on is easy—just follow these steps. Write enable a copy of your Workbench disk. (That means move the little black tab so you cannot see through the hole in the corner.) Double click on the Workbench 1.2 icon. Then double click on Preferences at the bottom center of the Workbench window. Next click the CLI "On" gadget at the left center of the Preferences window. Last, click the "Save" gadget in the lower right.

Now reopen your System drawer and there's the CLI icon. If this does not work, somebody has probably tampered with your CLI icon file. What Preferences does when it "turns on" the CLI is to rename the file CLI.noicon to CLI.icon. Although DOS is not case sensitive when it comes to matching file names, Preferences will be in this instance. If, for example, you rename CLI.noicon to cli.noicon, Preferences will let you select CLI "On," but you still won't have access to the CLI in the System drawer because Preferences won't find your lower case file name. Get a friend to help you fix your disk so that the system drawer contains a file named CLI.icon.

BEGINNING BATCH

From time to time you may feel that your computer is using you instead of the other way around. Maybe you can't remember a particular series of commands or the syntax of one command. Maybe you have to do an unusual setup for a particular program. Amiga DOS provides a simple way for you to get back in the driver's seat—batch files.

Although DOS gives you lots of control, it must take a very general approach to accommodate all its possible users. You can adapt it to your needs and create your own "commands" by combining individual DOS commands into batch files. A batch file may be nothing more than a sequence of DOS commands that you want to execute. Or it may be much more and give you control you hadn't thought could be so easy.

The batch file itself is just an ASCII file that contains a series of DOS commands, typically one to a line. EXECUTE this batch file and DOS will carry out the commands one at a time until it reaches the end or encounters an error.

Whether you know it or not, you have been using batch files since the first time you turned on your Amiga. When the Amiga first boots up, it automatically looks for a special batch file named Startup-Sequence, found in the S directory of the Workbench disk.

Although some dealers will fiddle with the Startup-Sequence batch file, a typical one will look like this:

```
echo "A500/A2000 Workbench disk. Release 1.2 version 33.56*N"
BindDrivers
if EXISTS sys:system
   Path sys:system add
endif
if EXISTS sys:utilities
   Path sys:utilities add
endif
Dir RAM:
```

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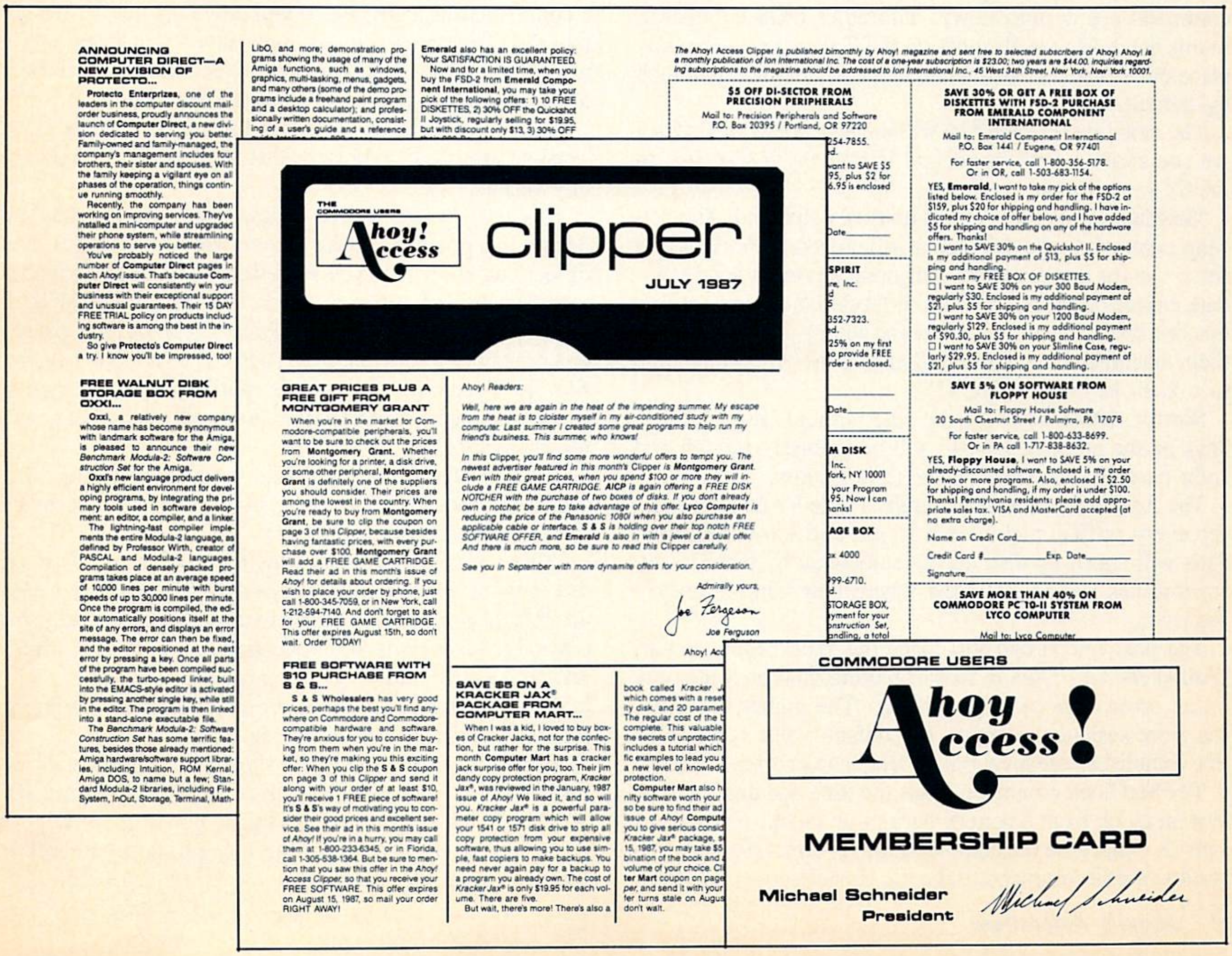
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```
Path RAM: add
SetMap usa1
AddBuffers df0: 20
LoadWb
FailAt 30
SetClock>nil: opt load
Date
EndCLI>nil:
```

To begin to get an idea what we can accomplish with batch files, let's take a look at this one line-by-line. (If you want to see yours, at the CLI prompt type CD, S, then type TYPE Startup-Sequence. Hit the spacebar to pause scrolling and backspace to resume.)

The first line reminds us what release and version of DOS we are booting. The echo command merely prints whatever follows it in quotes. If you ever have strange problems with your Amiga, it can be important to know these numbers.

"BindDrivers" on the second line will find any device drivers in the Expansion directory of the Workbench disk. These drivers allow certain hardware you may add to your computer system to be recognized by DOS. In many systems, the Expansion directory will be empty and this command unnecessary.

Next we see two if/endif routines. These test whether the directories System and Utilities exist in the root directory of the boot disk (sys:). If either of these directories EXISTS, it will be added to the path DOS searches when it looks for a program or command you want to run. DOS needs the system directory in its path to find the SetMap command a few lines down. The other DOS commands in this batch file are all found in the C directory–the only place other than the current directory where DOS will look by default.

The next line (Dir RAM:) will create a RAM disk. Then we see another Path command to add the RAM disk to DOS's search path.

"SetMap usa1" may seem an unusual command. The SetMap command tells the Amiga which country's character set to use for the keyboard. Different keymaps accommodate unique characters used in different languages. At first this line doesn't seem critical. Some people delete it to make their machines boot faster. After all, the Amiga defaults to a U.S. keyboard. Right?

Sort of. Most keys will be fine without "usa1." But 5 keys on the numeric keypad will be ignored–the left and right parentheses, slash, asterisk, and plus.

The AddBuffers command grabs a little RAM (512 bytes for every buffer) and adds it to the cache for the drive. This will speed up disk access somewhat by temporarily storing disk sectors in RAM where they can be quickly retrieved.

The next line (LoadWb) loads the Workbench screen. "FailAt 30" tells DOS to stop executing this batch file only on an error code of 30 or greater. The higher the code, the more serious the error. The default value is 10. This line establishes the level below which an error is not fatal.

The SetClock command reads the time and date into the system clock from a battery backed-up clock, if one is installed. Otherwise the command has no effect. Routing the results of this command to the nil: device prevents it from displaying the date and time. Next, the Date command forces the display of the date and time on your computer screen. (This is Commodore's batch file, not mine.)

The final line in the Startup-Sequence batch file closes the CLI window in which all this activity has been taking place. Had the EndCLI command been given before the LoadWb command, DOS would have been terminated, leaving us with neither a command line nor a mouse-driven interface.

Notice that the output of the EndCLI command is sent to the nil: device. By default, an EndCLI would print the message "CLI task 1 ending" as the CLI window disappears. But nil: takes this output and does absolutely nothing with it.

We have seen a number of different DOS commands to be executed as part of this batch file. We've also seen a couple of other commands (echo and if/endif) that are not available to us as normal DOS commands. In future columns we will look at these special batch commands in detail and see how we can use them as a mini programming language to customize our computers.

As we learn to create more complex batch files, a few guidelines are in order:

- Print messages on the screen to show what's happening, especially if the operation will take more than a few seconds. This will reassure the user, even if it's you.
- Do not let distracting messages print. If you are copying a series of files to a RAM disk, print a message saying so, but don't have each Copy command print.
- Document your batch files internally. The purpose of a command that's obvious to you now may not be in a few months. The batch file will have saved you from having to type that command over and over and may also have allowed you to forget the command's purpose.
- Use "echo" to create blank lines in the batch file to separate groups of commands that are logically or functionally related.
- When you are testing a new batch file that has any destructive potential, make sure to work only with backup disks. You know how you want that Delete or Format command in the batch file to work, but until you test it....
- If you want to display a whole screen of text, consider saving it as a separate file. Then "type" it from the batch file. This separate file may be much easier to format or revise, especially if you want to use borders or other graphics characters.
- Leave things like you found them. This means deleting any temporary files created by the batch file, restoring the path if you changed it, etc.

What are some potential uses for batch files? You can use them to automate backup of data files when you quit an application program. You can use them to control printers and to reset paths for application programs that are finicky about such things. And you can use batch files to give instructions before an application is loaded or to give reminders when the application is quit.

A great batch file can really show your computer prowess. Send me your best (P.O. Box 1544, Tallahassee, FL 32302). If it's as good as you think, you'll not only get a free PD disk, but you'll get the recognition you deserve, right in these pages. ☐

SCUTTLEBUTT

Continued from page 23

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Two devices with applications for the computer user: Honeywell's Power Lockout Control (left) and Call-In Control (below).





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